Wanderings in search of Health

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WANDERINGS IN SEARCH OF HEALTH

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IN

SEARCH OF HEALTH

OR

MEDICAL AND METEOROLOGICAL NOTES ON VARIOUS FOREIGN HEALTH RESORTS

BY

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"All is but lip wisdom that wants experience."—SIR PHILIP SIDNEY.

WITH ILLUSTRATIONS

LONDON
H. K. LEWIS, 136 GOWER STREET, W.C.
1890

1 Ft 129

PRINTED BY
H. K. LEWIS, 136 GOWER STREET,
LONDON, W.C.

12.76.
1 12 186
March 1890.

Dedicatio.

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WANDERINGS
IN
SEARCH OF HEALTH.

INTRODUCTION.

MANY are the books and monographs on Health Resorts by medical men possessing technical knowledge and experience as to the requirements which such places should supply. Some are by those who have only paid a flying visit to the various localities, and that whilst in health and vigour, and who therefore can scarcely appreciate their several advantages and disadvantages to the invalid; for it is more especially he who goes in a weakly condition to recover his health, who begins to find out and duly appreciate the merits and faults of any given place. Again, many monographs of localities are written by those who have lived and practised in them, and who are therefore uncon-

sciously prejudiced in favour of their own locality, not only from their living in the place and seeing many of their patients do well and improve in health, but also from their owing, very probably, their own restored health to it, therefore they naturally praise it even beyond its deserts, when it is brought into comparison with other places.

It is no doubt hard even for two invalids to entirely agree on the various advantages and disadvantages of a health resort, not only because their maladies and constitutions differ, but also on account of their inherited and acquired tastes; one feeling moped and bored in a quiet and more or less country place where there is but little gaiety going on, while another will feel far happier there, and far more contented with Nature's surroundings than with the artificial attractions of a fashionable town with its promenades, balls and theatres.

Nevertheless most medical men will agree, more or less entirely at all events, on the broader points of discussion as to the merits of a given place, and as to its suitability as

a health-giving locality for various classes of invalids.

Now it is from a medical man's point of view, who himself is an invalid, and who has been abroad for several years in search of health, but who previously had also travelled a good deal in Europe, America and the Colonies in health, that the following pages have been written; and he has in them, without favour or malice, and he hopes, too, without giving offence, jotted down his personal impressions of, and his experiences in, various localities for the information and guidance of others. Nobody can deny that there is still much room for a fuller and better knowledge of the kind of climate and of the nature of the accommodation and surroundings which invalids and convalescents, who are often indiscriminately sent abroad for change of air, are likely to meet with at foreign resorts. That this is the case amongst not only country practitioners and those who have never had the opportunity of travelling abroad, but also amongst London consultants, is amply proved by many statements made regarding

the climate or advantages of some given place, and by the tales of the bitter disappointments and the disagreeable experiences of many an invalid whom one meets abroad.

The plan of advertising new resorts by interested hotel, railway or steamboat companies by means of puffing pamphlets, is a great and growing evil, spreading broadcast, as they so frequently do, most misleading and exaggerated statements, thus causing many of these bitter disappointments.

Again, the diametrically opposing opinions held in one resort as to the climate and merits of another are quite an amusing study. Thus in the Riviera it is said that the Alpine resorts can only be injurious, on account of the long hours patients have to spend indoors in an atmosphere vitiated by hot stoves, and on account of the close contact of so many phthisical patients in rooms where proper ventilation cannot be properly effected, through the great draughts caused by the coldness of the external air in that climate, and its great contrast to the air of

the heated rooms. The difference indeed is often 60 degrees. On the other hand, at Davos it is said that the Riviera is all very well for patients who can never expect to recover, and who only want a mitigating climate to die in; but that to expect any consumptive, for instance, to be cured, or obtain any permanent benefit, would be the height of absurdity. Again, in Madeira it is said that the cold winds of the Riviera are most injurious to invalids, and that the glowing descriptions often written on the climate experienced there are merely poetical rhapsodies as applied to the Mediterranean littoral, but if taken literally, do exactly describe the climate of Madeira: that what is euphemistically described as "the invigorating and bracing air" of the Riviera really means, if translated into ordinary language, "cold, wintry and windy weather."

So the battle of health resorts proceeds, each locality being praised and decried in turn, so that it is most difficult to come to a satisfactory conclusion as to the real merits of a place, unless it has been actually

visited and lived in, and due comparison made with other localities.

The following pages are written primarily from the point of view of the *poitrinaire*, and it is with his wants and requirements that they are chiefly concerned. Nevertheless other ailments may be referred to, and will be more especially named when reference to them is indicated.

With regard to the indiscriminate way in which patients are sent abroad, which I have alluded to above, and the sad results of which, one is constantly coming across, Dr. Clifford Allbutt has well said, "it is astounding to see the airy way in which a doctor, who has never been out of England, orders off his patients, this one to Aix, that to Carlsbad, and a third to Davos, and so forth, merely on the knowledge that one is good for rheumatism, the second for liver, and the third for phthisis." Whereas to advise rightly it requires not only an accurate knowledge of the precise kind of case to be sent, but also some knowledge of the characteristics of the locality itself which is chosen. A knowledge of the mere baro-

metric, thermometric and hygrometric readings of a place are not sufficient, though of course they are of great value in helping towards a decision. A personal experience of the climate, of such a climate as that of Davos for instance, should be had, if possible, before a patient who is in at all a critical condition should be sent there. Such cases, again, should only be sent away sparingly from home at all, and by no means as a matter of course. In no disease is this knowledge more needed or of so much importance as in phthisis, for in this complaint a wrong decision may greatly aggravate the malady, and instead of an invalid having all the attention his relations at home could give him, and would often be only too glad to give him, he not unfrequently dies away from home amongst strangers, neglected and uncared for. Such sad cases are constantly occurring; sometimes indeed the invalids die almost immediately after their arrival, not having sufficient strength even to survive the fatigues of the journey or voyage. A case very much to the point has just come under my notice;

the lady in question having been a patient of a friend of mine. Though her own medical man was against her leaving home, she was advised to do so by a consultant. She was carried from her room to the cab, from thence into the train, and from thence on board a steamer for a passage of some days' duration. On arriving at her destination she was carried up to her bedroom at the hotel to die, far away from home and amongst strangers, only four days after her arrival.

It is in the endeavour to change the entire surroundings and environment of the patient that the climatic treatment of phthisis becomes so valuable; thus striking if possible at the cause which has induced the disease, whether it be an unhealthy employment, a damp soil, unhygienic surroundings, a vicious mode of life, or what not. Consumptive patients too generally labour under the error that they have just a little "delicacy of the chest," and that a couple of months' holiday will set them all right again, and no doubt they may gain some improvement in that time; but the disease can be by no means cured, and thus much harm is

effected, and they only relapse into a worse state than they were in before. They should be impressed at the outset with the gravity of the complaint, and that without the greatest care and attention to small details they will go from bad to worse, cure then being unattainable, and mere palliation only to be looked for. A patient should therefore be warned at once, and at the outset, that two years at least, and frequently longer, must in all probability be devoted to regaining his health if a cure is to be obtained and not a mere palliation of the active symptoms. Of course this happy result may be obtained in exceptional cases in a much shorter time. It is universally admitted now that an absolute cure can be, and often is effected, though not many years ago it used to be considered an incurable disease. It is impossible, however, to prognosticate with any certainty which cases will recover; for not unfrequently while one makes a good recovery, an apparently equally favourable case will steadily tend to a fatal termination in spite of all treatment.

I must here take the opportunity of returning my most sincere thanks for the great kindness and attention I have personally received at the hands of my professional brethren in the various places I have visited, whether at home or abroad.

I have also to acknowledge my indebtedness to the valuable writings of Dr. Hermann Weber, Dr. Burney Yeo, Dr. Henry Bennet, Dr. Sparks, Dr. Marcet, Dr. Wilson, Dr. Lindsay, Dr. More Madden, etc.

CHAPTER I.

The Ocean as a Health Resort in Phthisis.*

The almost world-wide distribution of phthisis, and the large proportion of deaths caused thereby in nearly every country, a few favoured districts and islands alone being exempt, whilst in many parts of the world it stands in the first place as a cause of death, makes it a subject of special interest to us all. This interest is increased since we find by clinical experience that under careful treatment and favourable circumstances, it is certainly a curable disease. There can be no doubt that climate has a most marked influence for good or evil upon the progress of the disease, and therefore the merits of various places, or so-called health resorts, which have a beneficial influence on the disease, have frequently been

* Reprinted and enlarged from a paper in the *Manchester Medical Chronicle* for August, 1885.

discussed. The ocean, even from ancient times, has always had its advocates as a health resort. Celsus, for instance, one of the most esteemed of ancient medical authors, writes :—"Opus est si vires patiuntur longâ navigatione, coeli mutatione, sic ut densius quam id est ex quo discedit aeger petatur. Ideoque optissime Alexandriam ex Italiâ iter. Si id imbecilletas non sinit, nave tamen sed non longe vectari commodissimum est," *i.e.*, "if the patient's strength allow he must take a long voyage, changing his climate, taking care to seek a denser air than that he leaves, and therefore from Italy to Alexandria is a very suitable change. If the weakness (of the patient) does not allow of that, it is very proper, however, to sail in a ship, but not far."

It is now, however, perhaps more popular than ever, though the popularity of the sailing vessel is perhaps waning in favour of the greater comforts obtainable on the ocean-going steamers. But very numerous are the patients sent off yearly by both sailing vessel and steamer, to try a long

sea voyage to Australia, New Zealand, or other distant part of the world, for various complaints, the chief of which, however, is consumption.

Unless a trip be taken in a private yacht, the possibility of taking a voyage in a sailing vessel is now almost confined to the long sea voyage to Australia and New Zealand. It is far otherwise, however, with regard to steamers, for in them a great variety of either long or short voyages may be taken, all in well appointed passenger ships. Perhaps in the way of short voyages, the most satisfactory for the invalid, if only he can refrain from doing too much sight seeing on land at the different points of call, are those which can now be taken in various steam yachts and pleasure steamers to the Mediterranean, to the Canaries, to the Fjords of Norway, and so forth. One great advantage of these trips is that the passengers, and not the cargo or mails, are the first consideration, and thus, for example, such trying and disagreeable necessities as crossing the Tropics are avoided.

Now in this, perhaps, as much as in any

other class of health resort, is it important to recommend suitable cases. Many and many are sent out yearly in this manner, and unattended by friend or relation, only to be a tie on those around them, and then eventually to succumb before reaching their destination; or if they do survive, are only in a condition to be drafted into the hospitals. For instance, Dr. Griffith, of Melbourne, in a letter to the *British Medical Journal*, Feb. 9th, 1889, says:—"At the present moment I have several phthisical patients under observation in the wards of the Melbourne Hospital. These have all arrived recently from London by sailing ship, after a prolonged endurance of hardship and discomfort, and their condition was greatly aggravated by the voyage." Again, he says:—"Last week a gentleman recently arrived from London consulted me. He is suffering from tubercular phthisis, and his condition is quite hopeless; but he was advised by a London physician to make a voyage in a sailing vessel. He was ninety-four days on the voyage, and very nearly died during the cold wet weather; but in

any case he was an unsuitable patient to send abroad for climatic treatment." Medical men too seldom realise what they are advising when they recommend a sea voyage to any but the physically strong; in theory it is all very well, but in practice it is a very different matter. I have seen cases in the third stage of consumption, and that rapidly progressing, sent on board without a friend or even an attendant, to brave all the difficulties, trials, and often real hardships of a long sea voyage. At the same time one must not forget that it is often by the patient's own determination, and against the will of his medical adviser, that he sets out on a voyage, or makes up his mind to go to some much lauded place of which he has read, where he expects to be cured, in however bad a condition he may be.

Though the commissariat on the Ocean Steamers is fairly good, and on good sailing vessels very much improved from what it used to be, nevertheless it is not at all what an invalid should or would have if he were at some health resort on land. It is ad-

mitted that no air is purer, not even that at the top of a mountain, than that far out at sea; but the difference between it and that of a seaside health resort, well exposed to sea breezes, must be small, and both are laden with the saline particles which are considered so health giving. Any slight advantage there may be as to the pureness of the air of the ocean is, I maintain, far outweighed by the manifest disadvantages to an invalid at sea, such as the close ill-ventilated cabins, the draughty saloons, the weakness and straining caused by sea sickness, the damp sea fogs, the enforced confinement below during bad weather, and the great trial to an invalid of passing through the tropics.

A London consultant sent a friend of the present writer, a short time ago, on a voyage to Australia, though he had a cavity forming in his right lung, saying to him, "Oh! you will be basking in the sunshine and sleeping out on deck in the fresh air in a few days," little remembering all the above mentioned trials he had first to pass through. And when the wished-for latitude

is reached, with its warm nights, the decks are found to be so damp from the heavy dews that no such thing as the anticipated pleasure of sleeping in the open air is attainable, at all events for an invalid. The above-named gentleman did survive his voyage, but was scarcely strong enough to walk unaided when he landed in Australia; and of the ten consumptives on board the same vessel, *six*, at least, died amongst strangers in various parts of the Colonies shortly after their arrival.

Has anyone, may I ask, ever heard of such a mortality as that amongst patients sent to any health resort on land, whether at home or abroad, in so short a period? On the other hand, many cases with sufficient strength to withstand the drawbacks which have to be encountered, are greatly benefited by a voyage, and often cured. For instance, H., a professional cricketer, who came under my own notice during a long voyage to Australia, was losing flesh rapidly, and had had hæmoptysis and other signs and symptoms of advancing phthisis. He gained no less than twenty-one pounds

during the voyage, and did not have a bad symptom after the first few days at sea. Now it is such cases as this, which so strongly advocate the cause of the ocean as a health resort; but we should find, on examination, that it is those in the early stages of the disease to whom it is most beneficial (a remark, as I have elsewhere mentioned, which is applicable to every health resort), whilst it is simply a fatal remedy to those in advanced stages of the disease. If we trace the course of a sailing ship on such a voyage, does it not stand to reason, that a patient to benefit by it, must be strong enough at starting to withstand the frequent inclemencies of the weather to be met with round our coasts and the other drawbacks already mentioned, and afterwards the depressing effects of the tropics; or again, the cold bad weather so often encountered between the Cape and Australia? If he has not this stamina left in him, he will almost certainly get an exacerbation of the disease which only too frequently ends fatally before the termination of the voyage.

Let us now take for example, the case of a

patient sailing in a well appointed ship in September or October, the most favourable time of the year for starting on a voyage to Australia or New Zealand. Not unfrequently the voyage is commenced by having a delay of a day or two in the Thames or in the Channel, on account of a cold clammy fog, which is most injurious to patients; but if clear, it is generally sharp weather, and the patient finds himself pacing up and down deck to keep himself warm in the cool autumn sea breeze, which frequently necessitates great coats and pea-jackets even for the healthy. As evening comes on, he has to descend into the saloon, only to find such draughts there as would frighten him or his physician if on land! Here he has to remain all the evening with his overcoat and cap on, making the best of it; or if he finds it too unbearable, he tries to take refuge in his private cabin, which he has probably to share with one or two companions, and which he finds very close and quite lacking the fresh air he would obtain in an airy bedroom on shore.

An equinoctial gale is not unusually met

with before getting away from our coasts, with its concomitant miseries of sea sickness and enforced confinement to the lower regions of the ship, with their draughts or want of ventilation, the deck being probably too wet and slippery for anything but a struggle to the smoking-room with its vitiated air.

This uncertain trying weather generally lasts for the first ten days or even a fortnight, but after this a much more pleasant time usually sets in during the ship's passage through what is called the calm belt of Cancer, where the winds are variable and the temperature much more genial. This belt of calms and variable winds is generally called the "Horse latitudes" by sailors, because vessels in old times bound to the West Indies and laden with horses, were so frequently delayed in it that the horses used often to die from want of water. This pleasant weather lasts also through the North East trade winds, which begin to blow steadily at about latitude 30° N., but varying with the time of year, and which carry the ship well into the tropics,

till the Doldrums, or belt of equatorial calms, are reached at a latitude of about 10° N. And here again the patient has to face another most trying period, and another trial of his strength, in the great depression caused by the heat and moisture of this region of the tropics. There are here constant falls of heavy rain, and the atmosphere is most steamy and oppressive. The action of this humid heat results in lessened evaporation from the skin, and diminished exhalation of aqueous vapour from the lungs. A plethoric condition is set up, with a lassitude of the digestive and other functions. The really depressing effect of it may be clearly seen in the healthy, for in the great majority a considerable loss of weight takes place, varying from two to four, or even six pounds, during the period usually spent in the most trying part of the equatorial region. If it is thus felt by the healthy, much more does the patient suffer. If he has been suffering from hæmoptysis or night sweats, the former frequently returns with increased violence, and the latter are rendered much more profuse, and there-

fore more weakening, while the appetite is almost completely in abeyance. Such real dangers are these, indeed, that not unfrequently advanced cases terminate fatally in this region.

Somewhere a few degrees north of the equator, (about 3° or 4° N. generally), the ship encounters the South-East trade winds, and a most delightful change in the weather takes place, which lasts till a latitude of about 35° S., when a more variable period ensues, till the longitude of the Cape of Good Hope is reached. On entering this part of the voyage the languor of the tropics is thrown off and the patient is braced up; and if tolerably well, regains in this period of about three weeks, the loss of weight he sustained in the preceding fortnight.

The ship now enters the well-known district of the "Roaring-forties," and here trials again await the invalid, for not only is a heavy sea generally met with, but ice is often near at hand, and the cold is so great as to give the majority of patients chills and chilblains, and renders it necessary for the healthy to run about on deck, or take part

in athletic exercises to keep warm. The invalid, being unable to join in such pursuits, has to wrap up and keep himself warm as best he can while on deck; but when he has to turn in on account of bad weather or nightfall, no warmth, no fire, is to be obtained, and he has to seek his bunk shivering, with the hope of finding the warmth in bed, which he is unable to obtain elsewhere. This trying weather lasts, more or less continually, till the longitude of the western point of Australia is reached, when it becomes decidedly warmer, and the patient is again able to sit on deck and enjoy the sunshine and his moderate and quiet exercise. This fair weather usually lasts at that time of the year (December) till the ship arrives at her destination, whether it be Melbourne, Sydney, or New Zealand.

Let it not be thought that I have given a prejudiced account of the voyage through personal illness, for on the contrary, I was in very fair health at the time, being able to be on deck in all weathers, and personally, thoroughly enjoyed the voyage, which was

taken in what is probably the best appointed passenger ship sailing to the Antipodes, viz., the Sobraon. I could not, however, shut my eyes to the sufferings of others, and should now, in a poorer state of health, dread it exceedingly for myself. It is almost useless to give any meteorological table for such a voyage as has been described, as the temperatures actually observed give no idea whatever of the personal feelings of heat and cold experienced at sea. For instance, the heat in the Doldrums rarely exceeds 85° F., which gives no adequate idea of the most depressing *feeling* of heat experienced there. Again, how inadequately is the bitter cold of the period between the Cape and Australia expressed by a temperature of 40° or 42° F.!

Passenger sailing vessels are now so rapidly becoming superseded by the ocean steamer, that they will before long probably become only a thing of the past. If the voyage is taken in a steamer, instead of a sailing vessel, several advantages are no doubt obtained, but at the same time there are decided disadvantages connected with it.

The saloons of the steamers are more commodious and frequently can be warmed in cold weather; the food is fresher and better, the tropics are more quickly passed through, and the danger of being becalmed in the Doldrums is obviated. On the other hand, the cabin space is sacrificed for the engines and large dining-saloon, and four passengers are not unfrequently crammed into a cabin of about the same size as would be allowed for two only, on a sailing vessel; not only so, there are many cabins which have not even any access to the outside air at all, having only a borrowed light. Again, the transition from cold to warm, and conversely from warm to cold climates is very much more rapid, and therefore much more trying to the invalid than in the case of the sailing vessel; and thus one of the main characteristics of the ocean climate, viz., its equability, is lost, while the incessant vibration of the screw is most annoying to many.

Another feature of long sea voyages which has recently come prominently forward in the medical journals is the absolute danger, besides the mere unpleasantness, of a person

being shut up with a phthisical travelling companion in a close, ill-ventilated cabin, for so many hours nightly for weeks together. Dr. Henry Bennet, of Mentone, in the *British Medical Journal* of Feb., 1889, relates a case which came under his own notice, very much to the point and demonstrating the great risk and real danger that may be run. His patient was a captain in the army, aged 27, who had been a model of health and strength all his life, and had scarcely ever known a day's illness. His family history was in every way excellent, with no taint whatever of phthisis. He had been serving in New Zealand and came home in a sailing vessel which took about four months on the voyage, occupying the same cabin with his wife who was in an advanced stage of consumption, and who died three weeks before their arrival in England. Till her death the port-hole was rarely open, and the cabin was consequently most ill-ventilated. He evidently became infected, for within a few weeks after his arrival in England, he developed symptoms of phthisis, and was in an advanced stage of

the disease when he consulted Dr. Bennet in the autumn, who soon after heard of his death. As Dr. Bennet well says, "a diseased person has no right to infect the sound public, in endeavouring to save himself," which principle is recognised in compelling isolation in many infectious diseases, such as small-pox; though of course as to the contagiousness of phthisis it does not compare in degree with them, still the danger does exist, as is proved by the above well authenticated case. It seems to me that there should be a largely increased number of single berthed cabins, and that the ship's surgeon should have the power of moving any advanced case of phthisis, and of certain other diseases to a single berthed cabin, both in the interests of the patient himself and of his travelling companion.

Besides the cases of phthisis, of various nervous complaints, of chronic catarrh, of anæmia and debility, of a tendency to scrofulous diseases, etc., for which an ocean voyage is adapted, there is one complaint for which it is sometimes recommended, but which generally ends in a dismal failure,

and that is dipsomania. Such persons have nothing to distract their attention and find very little to interest or amuse them on board, consequently they quickly fall back on the 'bar' for excitement. Even if at last they are forbidden to be served by order of the captain or surgeon, there are always friends or stewards ready to obtain drink surreptitiously for them.

The following tables of the weights of passengers taken on a voyage from England to Melbourne will explain themselves, and are given for what they are worth; but it must be kept in mind that the worst patients often refuse to be weighed at all, whilst others finding they are losing ground in the tropics, become disheartened, and will not again be weighed.

The most notable thing in them, is the great fall in weight both in the healthy and the phthisical in the tropics, and the remarkable rebound afterwards in the southern temperate region.

Table.

Weights of passengers taken at intervals of about a fortnight during a voyage to Australia.

The calculations as to relative loss or gain begin with the second time of weighing, and therefore the first weighings are omitted.

Second Weighings, Lat. 28° N.

Class I.—Healthy persons, or those suffering from minor complaints.

Class II.—Phthisical Patients.

Class I.—Number weighed, 32.

19 gained 64·5 lb, averaging 3·4 lb each.
8 lost 11 lb, averaging 1·4 lb each.
5 neither gained nor lost.

Class II.—Number weighed, 20.

12 gained 28 lb, averaging 2·33 lb.
5 lost 9·5 lb, ,, 2 lb (nearly).
3 neither gained nor lost.

Third Weighings, Lat. 5° N.

Class I.—Number weighed, 36.

5 gained 9 lb, averaging 1·8 lb.
27 lost 99 lb, averaging 3·66 lb.
4 neither gained nor lost.

Class II.—Number weighed, 15.

3 gained 6·5 lb, averaging 2·16 lb.
12 lost 54·5 lb, averaging 4·54 lb.

Fourth Weighings, Lat. 31° S.

Class I.—Number weighed, 36.

32 gained 111·5 lb, averaging 3·48 lb.
3 lost 2·5 lb, averaging ·83 lb.
1 neither gained nor lost.

Class II.—Number weighed, 12.

11 gained 54 lb, averaging 5 lb (nearly).
1 lost 4 lb, averaging 4 lb.

Fifth Weighings, Lat. 39—38° S.

Class I.—Number weighed, 33.

25 gained 54·5 lb, averaging 2·18 lb.
5 lost 12·5 lb, averaging 2·5 lb.
3 neither gained nor lost.

Class II.—Number weighed, 14.

8 gained 24 lb, averaging 3 lb.
3 lost 6 lb, averaging 2 lb.
3 neither gained nor lost.

TOTAL VARIATION BETWEEN FIRST AND LAST WEIGHINGS.

Class I.—Number weighed, 38.

29 gained 162·5 lb, averaging 5·6 lb.
9 lost 24·5 lb, averaging 2·73 lb.
Greatest gain, 13 lb.

Class II.—Number weighed, 17.

9 gained 78 lb, averaging 8 66 lb.
8 lost 16·5 lb, averaging 2·06 lb.
Two greatest gains were 20 lb and 19 lb.

CHAPTER II.

A Summer in the Engadine.

Switzerland has now become so familiar to our countrymen that one might almost say, who is there that has not at least some acquaintance with the beauties of that lovely country, and with the invigorating air of the playground of Europe? Of all its health-giving districts, the majority of those who know it best, would doubtless give the palm to the Engadine. Here, the very valleys are between five and six thousand feet above the sea; so that those who are unable to climb, and have from physical weakness to tread the level pathways, are enabled to breathe in, night and day, the rarified and invigorating air, causing improved nutrition and sanguification in the invalid, and stimulating the flagging energies of his system. For it has been shown that oxygen finds its way into the blood with increased readiness, and at the same time the carbonic acid gas

is eliminated from it with a greater degree of facility at a high altitude than at the sea level, and to this fact much of the curative power is due.

The praises of this district have often been loudly sung, and the means of getting there, and other such particulars are amply stated in many a guide book; so these details will be passed over, and we will turn to our more immediate object.

To reach any one of the villages of this elevated region, it must not be forgotten that there is a long and tedious coach drive, most fatiguing to an invalid; and it should, therefore, be broken at one or more of the villages used as stopping places on the chosen route. If a start be made from Coire, the visitor has to be up soon after 4 a.m., and to start in the chilly morning air at about 5 a.m., while the long journey is not accomplished till about 6 p.m., but varying a little with the route and the destination. If the Albula route from Coire is chosen, the journey may be broken at Alvenau or Bergun, or if the Julier route is taken, Tiefenkasten or Mühlen may be the

stopping place. Thusis is also a good stopping place, though it is rather too near Coire, but is perhaps most frequently chosen from its having a good, quiet and comfortable hotel. Not only on account of the fatigue should this long drive be broken, but also it is most essential in many cases that the ascent should be performed gradually, so that the heart and lungs may become accustomed by degrees to the rarefaction of the air at those high altitudes.

The long mountain valley of the upper Engadine is divided into two portions at St. Moritz by a natural barrier of elevated ground which runs across the valley; the chief resorts in the upper part of the valley are the Maloja, Sils Maria, Silva Plana, Campfer and St. Moritz, while those most frequented in the lower, are Samaden and Pontresina; the latter is really on a branch valley leading to the Bernina Pass. Although these are all within a few miles of one another, they each possess several distinctive features.

The accommodation at each and all of these places is very good, as also is the

food, though the large and fine Kursaal at the Maloja has the reputation of carrying off the palm in these respects, its spacious and well ventilated reception rooms being its special recommendation. Granting the many favourable things that have been said of this district, there are certainly some drawbacks connected with it, which an invalid must take into consideration: firstly, the almost constant high wind sweeping up and down the valley; secondly, the quantities of *dust* in the roads which is blown about in clouds by this wind; thirdly, the sudden and great changes of temperature which occasionally take place; and fourthly, the overcrowding of the hotels during the height of the season, and consequently the frequent impossibility of obtaining good rooms suitable for an invalid. As regards the first of these points, the Maloja, Campfer, and St. Moritz are the chief sufferers, being exposed to the full current of air which blows along the valley, while Sils Maria and Pontresina are decidedly more sheltered. In fact the difference in the amount of wind at St. Moritz and Pon-

tresina on the same day is frequently astonishing.

It is said that the latter is exposed to cold draughts of air at times, coming down the valley from the Roseg glacier, but I cannot say I felt it when there. The Maloja hotel being placed immediately on the exposed summit of the Maloja Pass, as it rises from the warm plains of Italy, perhaps gets the wind as badly as any place, though the anemometer there seemed ingeniously placed so as to show as little wind as possible! A diligence driver was asked if he generally found it windy on that road, and his answer was, "that he had driven the coach every day for between twenty and thirty years, and he had never yet found it anything but windy!" In fine weather the local valley wind generally rises between nine and ten in the morning and blows hard all day till about six in the evening, when it subsides. This is most aggravating for those who are susceptible to winds, for few invalids are able to go out before breakfast, and most are not allowed to be out after sunset.

Secondly, as to dust; perhaps in this

respect Campfer is the worst, for as both the hotels are situated immediately on the high road, they are often enveloped in clouds of dust, and the grass in the fields is frequently white with it. This quantity of dust is not only unpleasant, but when carried about in the air is irritating to the lungs.

Thirdly, as to changes of temperature; these are often sudden and decided, therefore plenty of warm clothing should be taken, as it is not at all unfrequently the case for there to be two or three falls of snow even in the warmest month—that of August. It seldom lies in the valleys for more than a few hours, but it is generally accompanied by a cold N.E. wind, and is a great and sudden change to an invalid, who has been sitting out daily and basking in the hot sunshine usually experienced in fine weather. Occasionally a bad season or a few weeks of really bad weather is experienced in these high valleys with almost constant rain, mists, snow showers and cold, rendering the climate unfit for delicate invalids. They should therefore endeavour

to ascertain before leaving their lower and warmer quarters that the weather is fairly good and settled.

Fourthly, as to accommodation; a south or sunny bedroom should be chosen; a little sunshine in cold or gloomy weather makes a wonderful difference in the room, so a south one should not be overlooked or neglected even in summer. In order, therefore, to get a choice of rooms, it is better to go early in the season, otherwise an invalid may find himself packed away in some dark and dreary little room, which is anything but conducive to health. In the height of the season it is often almost impossible to obtain any accommodation at all, even though the hotels have so vastly increased their resources of late years, and new arrivals may have to put up with a shake-down in the billiard room or elsewhere for some days. This applies perhaps more especially to Pontresina.

Summing up the special aspects of these various summer resorts in this extensive valley; we have standing at the head of the valley the magnificent Kursaal of the

Maloja, situated at the summit of the pass, at an elevation of 5,688 feet, well known in connection with Dr. Tucker Wise's writings on the "Alpine Winter." Its excellent management, its admirable system of ventilation, its numerous and spacious reception rooms, its fine airy corridors and many other advantages are well known. Nevertheless, its position is unfortunately chosen, being greatly exposed to winds, as before stated, and also being placed too near, and too much on the same level, as the Lake. The swampy, damp and boggy ground at the end of the Lake of Sils, which itself is only two or three hundred yards from the hotel, approaches it far too closely, for unhealthy emanations arise from it; besides which there is scarcely sufficient fall for the drainage when the lake is full, thus causing backward pressure up the sewers. They are, however, well trapped, so that no sewer gas can enter the building.

Sils Maria, on the southern side of the valley (5,880 feet) is very quiet, and is well protected from the "Thal" or valley wind. Here, one is removed from the stir and

bustle of St. Moritz and Pontresina, while the hotels are comfortable and some distance from the dusty high road.

Campfer, still further down the valley, is capitally situated, at an elevation of 5,950 feet, on the north side of the valley, and well removed above the damp fields by the river side. Both hotels are good and comfortable, but much exposed to the valley wind, and to the dust from the high roads. This place is most conveniently situated for those who wish to take the waters at St. Moritz, and yet wish to avoid the fashion and bustle of that place, and to rusticate after the fatigues of a London season or the drudgery of a city office. The walk through the pine woods of a mile and a half to and from the Trinkhalle at St. Moritz Bad is very enjoyable, and much more pleasant than the steep and dusty high-road to the Kulm.

In the valley below St. Moritz, are Samaden and Pontresina. The former at an elevation of 5,700 feet and three miles below St. Moritz, is much less interesting and pretty than the other villages; but it forms a useful "overflow" for visitors who cannot

get the accommodation they require at Pontresina or at St. Moritz, and who have to wait there and "bide their time."

Pontresina situated at the same elevation as Campfer, *i.e.*, 5,950 feet is, with the English, the most popular of the Engadine resorts. It is also about three miles from St. Moritz, but situated in a branch valley, that leading to the Bernina Pass. It is a splendid centre for mountain excursions, and is therefore very much given up to the tourist during the summer months. It is said to suffer from the cold winds off the Roseg Glacier to which it lies exposed; but however this may be, for we have not noticed it ourselves, it is most certainly far less exposed to the daily strong valley wind, so much felt in the main valley of the Engadine.

Tourists too often consider Pontresina, and some other such places, essentially their happy hunting grounds, and seem to think that no delicate person has any right to intrude on these their own peculiar domains, which often renders these places trying to invalids. Dr Sparks thus speaks on this

point :* "In summer the tourist is supreme, whether he invades your would-be solitude by parties of two or three, or in Cook-led multitudes of fifty or sixty . . . . . He rises at 3 a.m., and sometimes at 2 a.m., and the sound of his bath wakes you through the thin pine-wood wall. The night is his, and, with calm indifference to the surrounding sleepers, he stamps with his heavy feet and whistles in the corridors. All this, and much more, without the least exaggeration, the tourist, and most of all the British tourist, does to annoy his fellow-men and demonstrate his own selfishness. In so doing he renders some of the best parts of Switzerland unfit for the abode of delicate people."

St. Moritz is the central and most fashionable of the Engadine resorts, and is especially patronised by Germans and foreigners generally, on account of its baths and mineral chalybeate waters.

Many delicate persons are sent there to take the waters; while many others take them, although there may not be much the

* *The Riviera*, Edward Sparks.

matter with their health; for a German would never consider that he could obtain any good from a holiday and change of air, unless he partook of the waters and used the baths regularly, at some one of these numerous springs in his own or in a neighbouring country! The village of St. Moritz Dorf is situated on the side of the mountain, about 300 feet above the valley where the Kurhaus and springs are. It is much exposed to winds, and the high road forms a rather long and dusty climb for those who have to go down daily for the waters, though there are plenty of conveyances for those who wish for them.

St. Moritz Bad has two chalybeate springs, the Alte Quelle and the Paracelsus; the latter contains the larger proportion of carbonate of iron and is the one usually drunk, the water from the other being used chiefly for the baths. The Paracelsus water, even, does not contain half as much iron as the Tunbridge Wells water, but is strongly charged with carbonic acid gas, and is quite pleasant and refreshing to drink, notwithstanding the chalybeate taste, which

is by no means strong. These springs were known to the ancient Romans, but they have only been used by modern Europe for the last two centuries. To take a series of 20 to 25 baths is considered an essential part of the cure to be obtained there, at all events by foreigners; but the truth of this we greatly doubt. The water is heated by jets of steam being forced into it, till it is raised to a temperature of 90° to 95° F. The patient has to remain in the bath from 20 minutes to half an hour; the bath being covered over by a wooden lid with a hole in it for the head, which alone remains visible. In some few cases the stimulating effects of the carbonic acid in the water may be of some value, while the mere immersion in the water is soothing to others. But as Dr. Burney Yeo in his "Health Resorts" "If the good these baths do be in many cases problematical, the *harm* they occasion in some instances is by no means doubtful."

I have, myself, known debilitated ladies who have been ostensibly sent up to the Engadine for its bracing and stimulating

air, come back from the baths, day after day, in a semi-exhausted condition, declaring "they did not really know whether they would be able to last out the course, for there were yet ten or twelve (whatever it might be) more to take!" Still they would persevere with the baths because they had been ordered to take them, though they felt and acknowledged their debilitating influence. Again, there are many cases where the sudden change of temperature and atmosphere from the hot and steamy air of the bath-rooms, laden with moisture, to the keen air outside, cannot but be harmful, more especially when the skin is relaxed and sodden with long immersion in hot water. If the Swiss physicians exercised a little more discretion, and allowed those persons who feel fatigued and exhausted after the baths, instead of invigorated, to leave them off before the "course" was finished, confining them to merely drinking the waters, and thus permitting them to be braced up by the invigorating air of the mountains, then doubtless better results, even than at present, might accrue.

In fact what is wanted here, as is often the case elsewhere, is more elasticity of treatment; for the human constitution defies a rule-of-thumb treatment. I feel sure that the chief therapeutic agent at work there, is the pure and bracing mountain air, while the baths and water-drinking are only a useful adjunct in certain cases.

The hotels do not open throughout the Engadine till July 1st, except in the case of those kept open during the winter; while the real season does not begin till the middle of the month, and only lasts till the middle of September.

Though I shall enter more fully upon the therapeutic influence of altitude when speaking of Davos Platz, still here I may shortly consider what cases are likely to benefit by a summer residence in the Engadine, for on this point there have been many misconceptions, and I may also shortly state in what cases a residence there, and the partaking of the waters of St. Moritz, should be avoided.

Firstly.—In anæmia and chlorosis.

These cases are generally wonderfully

benefited by a stay there, and the mild chalybeate water is a most useful adjunct, though as the amount of iron is very small, it is sometimes useful to supplement it by iron in other forms.

Secondly.—A residence in the Engadine is often most valuable in convalescence from severe illnesses, such as typhoid fever, diphtheria, and other debilitating diseases.

Thirdly.—The beneficial results of a holiday spent in the invigorating air of St. Moritz or Pontresina to the jaded and overworked, are well known, as well as in cases of general weakness from constitutional causes.

The pale and careworn features of the professional or business man, the languid and listless step of the debilitated, the capricious and fanciful appetite of the dyspeptic, soon give place to the well-tanned face, the springy elastic tread, and the hearty appetite of the healthy tourist or mountaineer. The great risk in these cases is, that they should exhaust their newly found vigour, instead of putting by a reserve of energy and harbouring their strength for

future use. Early cases of phthisis should be particularly warned against this risk; for such patients are often deceived as to the measure of their improvement, and imagine that with cessation of fever, and of night sweats, with improved appetite and returning energy, they have practically recovered, only to be bitterly undeceived by a serious relapse or hæmorrhage from endeavouring to do what they see the healthy around them doing, and to undertake similar excursions. This lesson has been deeply impressed upon myself by bitter personal experience.

Dr. Henry Bennet thus speaks on this point:—"Those who do the best are those who accept their position cheerfully, who secede entirely from the valid part of the population, from their amusements and occupations, and are content to lead a quiet, contemplative existence. Happy are they if they can find pleasure in books, music, sketching, and the study of nature; if they can be satisfied to spend their days in the vicinity of the house in which they live, and to sit or lie for hours basking in the sun, like an invalided lizard on the wall, follow-

ing implicitly the rules laid down for their guidance."

As simple altitude without the aid of the intense cold of an Alpine winter, which so many find too trying for them, has been amply demonstrated to be one of the chief prophylactic and curative agents in this most dangerous, but still curable disease of phthisis, more advantage should be taken of the summer season in these regions, it seems to me, than is usually done by patients. Instead of hurrying home from their warm winter quarters, and often undoing much of the good they have obtained by wintering abroad, they should then ascend to these high altitude stations for the summer. They would then obtain most of the advantages said to be obtained by wintering in Alpine regions, without running the great risk there no doubt is for many invalids from the intense cold of the winter.

The air, certainly, during the summer months, is not so dry (*i.e.*, the absolute humidity is greater) as during the intense cold of winter, for the air is then incapable

of holding so much moisture in suspense, but still the dryness at that elevation is considerable. There are also more impurities and dust in the air than when the ground is covered with snow, but with judicious selection of residence, this evil may be reduced to a minimum; while on the other hand, the evil of living for so many hours a day in over-heated rooms is avoided.

Persons with heart or kidney disease, should as a rule not go to these high elevations even in the summer; nor indeed should those with brain affections, such as epilepsy, or those who have a tendency to apoplexy.

The widely spread idea which used to prevail, that high altitudes caused hæmoptysis in cases of phthisis, has been amply disproved by practical experience; but where there is a tendency to it, the waters of St. Moritz should be avoided.

DAVOS PLATZ.—WINTER.

CHAPTER III.

A Winter at Davos.

This favourite winter resort is so well known at the present day, both from the ample literature regarding it, and from the many who have paid it a longer or shorter visit, either on account of health or pleasure, that it requires no detailed description of mine. Davos Platz has its "devoted friends and its bitter enemies," but it is by far the most popular of the Alpine winter resorts, and indeed, it has become so much so, that an outcry has been raised lest it should lose some of its peculiar aptitude for invalids :— firstly, by the increasing amount of smoke created, which in the still atmosphere of winter in this narrow valley, frequently hangs like a cloud over the village, vitiating the atmosphere, and thus doing away with one of its chief advantages and attractions, namely, the absence of all dust and irritating particles in the air ; and secondly, by

the aggregating together of a large number of persons and houses, which has been fully proved to be one of the most fruitful causes of phthisis, and to the absence of which in mountainous regions and amongst the nomadic tribes of the world, much of the immunity of the inhabitants is due.

The canalisation of the Landwasser, the small river flowing through the valley, is a very great improvement, and has greatly diminished the mists which used to rise from the river and from the damp and peaty meadows along its banks on either side. These mists are not yet, however, entirely prevented as has been asserted; for I have frequently seen them in the early morning, lying over the river and low meadows, before the sun had risen sufficiently to disperse them; but they do not, as a rule, rise so high as to envelop any of the English hotels, which are all situated on higher ground on the north side of the valley. In this respect the elevated position of St. Moritz Kulm, above the valley and lake, is an advantage it possesses over Davos.

The main drainage scheme, by which the

whole drainage of the valley is carried down below the village, before it is permitted to enter the river, is a great improvement to the sanitary condition of the locality. It would, however, be a great advantage if the authorities could do something to prevent the atrocious smells that occasionally come from the cowsheds in the meadows below the hotels, where the manure is allowed to collect for too long a time before being removed.

The water supply is excellent, being brought down in pipes from reservoirs on the Fluela Pass. The sanitary, heating and ventilating arrangements of the hotels are excellent, at least in comparison with the majority of continental hotels, and there is much more to praise than to find fault with; though there may be minor things which might be altered with advantage.

The adverse criticisms which one hears so freely expressed in those resorts, *where they do not require stove heat*, as to the unhealthiness of living nineteen or twenty hours or more out of the twenty-four, in overheated and unventilated rooms, are, to

a certain extent, unjust; though thorough ventilation is most difficult in such a cold climate, without causing dangerous draughts, where the temperature is so different outside from what it is inside the house. The public rooms certainly tend to get overheated, and I have frequently seen the thermometer in the "salon," in the evenings, standing at 76° or 78° F., though the physicians' rule is that the sitting rooms should not be kept over 60° F., nor the bed-rooms over 55°, and this, with the ventilator, *i.e.*, the upper part of the window which falls inwards, so as to shoot the incoming air up towards the ceiling, kept constantly open. The electric light has been introduced with much advantage into the Buol hotel, thus doing away with the smelly paraffin lamp and its vitiating action on the air.

The contemplated railway from Ragatz to Davos, already opened as far as Klosters, has been looked forward to with various feelings; with dire apprehension by some, but with favour by others. Inherently, it cannot but increase the growing cloud of smoke which has already been a cause of complaint,

and in fact has truly become a "burning" question there. Also through rendering coal cheaper, it will make it more generally used, instead of the much less smoke-producing wood or charcoal now generally burnt.

On the other hand, there are compensating advantages; the chief of which to the invalid will be the avoidance of the long, tedious, and sometimes, to him, dangerous coach drive to and from Coire. Fresh provisions, such as vegetables and fish, will also be more readily obtained.

With reference to the winter climate of Davos, though there has been much said as to the hot sunshine, the cloudlessness and the intense blueness of the sky, the dry and still atmosphere, when once the *true* winter weather has set in, yet little has been said of the dreadful period generally preceding it, when the weather for a month, or frequently six weeks, is as bad and as trying, save for the fogs, as anything to be met with in England, and often with even less sunshine than in our more favoured southern resorts, such as Ventnor or Eastbourne. Nor do we often hear of the disastrous

effects of a bad winter there, when there is a continuance of such weather as generally precedes the snowfall, and the "glorious winter weather" only occurs for a week or two at a time, with intervening longer periods of absence of sun, and the only too frequent presence of heavy snowstorms and bitterly cold winds. At these times it would be quite unsafe for invalids to venture out of doors, and even healthy individuals do not go out if they can avoid it; or if they do, they return with blue noses and pinched up features! Mr. J. A. Symonds has stated in an article in the "Fortnightly Review," that there is not a single day (or was not during the season he wrote) on which he could not venture out of doors; and that more liberties can be taken in the air of Davos than anywhere else. Now my experience has been precisely the reverse, and nowhere have I had to take so many precautions, or be so careful, as at Davos. That greater liberties can be taken by invalids in that climate than might have been expected, is true enough; and one is astonished to see on what bad days some

delicate people do venture out without being the worse for it. Probably the average experience lies between the two extremes; but it is a mistake, and even wrong, to encourage people to imagine they are to enjoy entire immunity from chills in a climate which is admittedly prone to cause acute inflammations, such as pleurisy and congestion of the lungs.

Again, it is often said, "that the cold is scarcely felt, and the chilly feelings of an English winter are not known." This may possibly be true enough for the few with whom it thoroughly agrees; but it is an exaggeration in the case of the majority of visitors, whether invalids or not. As to myself, I suffered very much more from the cold there than in England; as also did those relations of mine, who were with me, and who were in good health. No doubt it is very warm just in the direct rays of the sun, but one cannot be in the sunshine always, even on sunny days, while there are many days when there is no sunshine at all to be in. On sunny days the contrast between the sun and shade temperatures is

enormous, often over 100° F.,* and is therefore most trying.

Frequently extraordinary statements are made as to the weather at Davos, which often profess to be based on reliable statistics. If so, the years must have been picked out as affording exceptionally good results. For instance, I have a book before me (Dr. Lindsay on the "Climatic Treatment of Consumption") which gives a table of the average number of cloudy days for the respective winter months for an average of three years; the years are not specified, so I cannot verify them, but in the table the average of cloudy days for the months of October, December and January is given as "less than one each." This is to me a most misleading statement. The book was published in 1887, so I do not know whether the table included December, 1886, in which there were only 42¾ hours of sunshine throughout the month, with fifteen completely overcast, besides seven cloudy days, sufficient in that one year to make the average given for *fifteen* years at least, if not for *twenty-two*!! Even adding the average

* Blackened bulb *in vacuo*.

number of "wet and snowy days," which I presume were also cloudy, though their not being included under that category renders the table very misleading, which are given as only two for October, one for December, and two for January; and including also the number of days in which "some rain or snow fell," even then I cannot reconcile the table with the facts of the case. For again, in the same month rain or snow fell on *twenty-two days*, while the average given is six, so again that one month would nearly make up the average stated for four years.

Again, Professor Charteris in his work on "Health Resorts" makes the astonishing statement:—"During the season of 1881-82 there was at Davos a clear unclouded sky from the beginning of November to the end of March." Unfortunately I cannot obtain the statistics of the weather for that year, but the correctness of the statement may be gathered from the fact that in the exceptionally fine season of 1879-80, "perhaps one of the most perfect ever known in the Alps" (Yeo) rain or snow fell on thirty-six days between November and March!

Let us examine the season of 1886-1887, the winter of which was an averagely good one; January and February being perhaps better, and December rather worse than the average;—the season I spent there. The following tables are taken from the official monthly record.

TABLE I.

		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Barometer.	Highest .	25·26	25·15	24·91	25·32	25·35	25·27
	Average .	24·80	24·84	24·62	24·83	24·99	24·79
	Lowest .	24·18	24·46	24·09	24·06	24·69	24·23
Temp.	Maximum . .	68·2	52·3	44·1	32·9	40·5	48·7
	Average . . .	42·1	30·2	22·1	15·1	17·7	26·6
	Minimum. . .	27·5	4·1	—4·2	—6·	—4·9	—4·9
Sunshine, hours		140	84	42¾	136¾	147¼	135½
Rainfall, millimetres .		50·2	52·4	87·3	6·6	4·9	43·1
Humidity	Relative .	78 p.c.	84	87·3	87·97	81·55	80·32
	Absolute in mm. of Mercury.	5·18	3·67	2·78	2·09	2·11	2·96
							TOTAL
Sky. Number of days.	Cloudless .	11	10	2	23	18	9=73
	Clear	10	3	7	3	4	4=31
	Cloudy . . .	4	9	7	2	1	9=32
	Overcast . .	6	8	15	3	5	9=46
	Rain or snow. . .	10	11	22	2	4	15=64

From this table it will be seen that during the winter season October, 1886, to March, 1887, the mean pressure of the barometer was 24·82; the mean temperature was

24·6° F., and that of the months December, January and February, 18·2°; the mean lowest temperature for any month being 15° for January, and the lowest temperature recorded —6° F.

The average number of hours of sunshine was 114·3, while in December there were only 42¾°; the rainfall amounted to 244·5 mm., or nearly ten inches of rain; snow falling on fifty-five days, and rain on nine, or a total of sixty-four days on which rain or snow fell. The mean relative humidity was 83·1, being the mean of three daily observations taken at 7 a.m., 1 p.m., and 9 p.m.; there were seventy calm days, fifty-seven breezy, and fifty-five windy and stormy. The sky was cloudless on seventy-three days; clear, but not cloudless on thirty-one days; cloudy on thirty-two, and completely overcast on forty-six; or a total of one hundred and four clear or sunny days, and seventy-eight more or less densely cloudy.

Table II.

If Table I. be now extended so as to include the seasons of 1886-7, 1887-8,

1888-89, we find the following averages :—

	1886-7.	1887-8.	1888-9.	Mean For 3 Years.
Mean Temperature . . .	25·6	24·8	27·5	25·7° F.
Mean Temperature of Dec., Jan. and Feb. .	18·2	20·0	23·0	20·4° F.
Average hours of sunshine	114·3	101·0	124·0*	113·0
Rainfall. . . . . mm.	244·5	408·3	273·0	308·6 or 12·4 inches.
Days of rain or snow . .	64	75	48	62·3
Mean relative humidity.	83 p.c.	84·	78·*	81·7
Sky. Very clear.	73	64	76	71·0
Sky. Clear but not cloudless	31	35	43	36·3
Sky. Cloudy	32	28	20	26·6
Sky. Completely overcast	46	56	43	48·3

Table III.

Showing the average number of clear and cloudy days for the several winter months of the three years 1886-1889.

	Oct.	Nov.	Dec.	Jan.	Feb.	March.
Very clear . .	14·3	9·7	10·0	19·3	10·0	7·7
Clear	6·3	4·7	6·7	4·3	5·7	8·7
Cloudy. . . .	4·0	7·3	3·3	3·0	3·3	6·3
Overcast . . .	6·3	9·3	11·0	4·3	9·3	8·3

* For three months only; the statistics for the last three months of this season are extracted from the very good reports issued by the proprietors of the Belvedere Hotel.

Thus it will be seen that October had on an average, 10 cloudy days, November 16, December 14, January 7, February 12, and March 14; a very good winter record but scarcely coinciding with the table referred to before as given by Dr. Lindsay.

As every one knows, Davos and the other Alpine resorts are visited during the winter chiefly by phthisical patients, and it is that large class of invalids which has been chiefly benefited by a winter's residence in those high altitudes, and in the intensely cold atmosphere experienced there. The idea of sending such patients to such a climate would have appeared mere madness to the last generation, and yet now the danger is of pressing it too far, and of sending phthisical patients there without due care, and without first ascertaining whether they are suitable cases for such rigorous treatment. In fact it has now become the fashion to send those who have any weakness of the chest there, just as it was the fashion thirty or forty years ago to indiscriminately order patients to Torquay or to Madeira.

The great revolution that has been wrought during the last generation in the treatment of phthisis, and I may add in the percentage of cures, has been brought about by the recognition of the fact on the one hand, that it is essentially a disease of debility and mal-nutrition, whether acquired or inherited, often induced, and always intensified, by living in a vitiated or impure atmosphere and in unhygienic surroundings of any kind; while on the other hand, the main factor in its cure is free ventilation in the house, and as far as possible, living an *open-air life*, which improves nutrition and counteracts the morbid tendency of the blood and tissues.

This revolution in treatment has been since further promoted, and the above view strengthened, firstly, by the actual results obtained by treatment at high altitudes, and secondly, by the comparatively recent discovery of Koch's tubercular bacillus. It is not that these discoveries have revolutionized the treatment of phthisis, as has been urged, for it had become generally recognised that the old plan of treatment, by

keeping the patient in a close hot room with no ventilation lest he should catch cold, and on low diet lest the fever should be increased, was a complete mistake. So it came to be acknowledged, that free ventilation and improved general nutrition were the essential factors, not only in the cure, but in the prophylactic warding off of this fell disease. The Alpine treatment has only been a further development of this theory, as affording to some constitutions a more powerful antidote to their mal-nutrition. Again, no medicinal agent, whether taken internally or locally applied by inhalation or other means, has been proved to have any specific power over the bacilli in diminishing their numbers, and that this result, if effected, is only accomplished through the improved resisting power of the tissues brought about by a better nutrition.

The discovery of the tubercular bacillus—apart from its great value as a means of diagnosis—has only proved more fully that it is the weakened tissues which form a congenial nidus for the development of the disease; and that it is only by these hygienic

means their dire effects may be counteracted. This result, naturally, is most easily effected in the first stage of the disease, where there is only some consolidation, or where there has been hæmoptysis without much local or constitutional manifestation of the disease to undermine the patient's physical strength and general health; and therefore it is, that if one consults a monograph, whether it be on Davos, or on the Riviera, on Madeira, or on the value of sea voyages, one always finds it stated "that the greatest amount of good may be expected in the early stages of the disease." This may, certainly, therefore be said of all climates, still the Alpine winter climate seems more frequently capable than any other, of checking that steady and irresistible onward progress of the disease, which in so many cases tends rapidly to a fatal termination in spite of all treatment. It must, however, be remembered that there is no dogmatic rule to go by, and not unfrequently cases that seem going only from bad to worse in the cold climate of Davos, take a good turn and begin to improve as soon as

they go to a locality with a warmer and more congenial temperature.

"There frequently seems," as Dr. Burney Yeo says, "some special relation between the individual to be cured and the particular climate that will suit him, and frequently it is only by actual trial that such a relation can be discovered." This raises the important point which I think is not sufficiently acted upon, that if the Alpine climate does not manifestly suit a patient, it is far better for him to leave at once for a lower altitude and a warmer temperature, rather than to try and brave it out, as he is frequently encouraged to do, with the hope of its ultimately suiting him. As a rule it is quickly manifest whether the climate does or does not suit a patient; and if it does not, no scruple should be felt in sending him away. The idea too prevalent there, and which is often openly expressed is, that the Riviera, Madeira and other such milder resorts are well enough to go to, when all hope of a cure or arrest of the disease has to be abandoned, but that if the patient has done badly at Davos, it seems to be held that the hope

of improvement elsewhere must be given up. Many patients, unfortunately, also become infected with this erroneous notion, probably from the wonderful improvement they see around them in favourable cases, and, becoming disheartened at their own non-success, give up hope and the endeavour to find a climate elsewhere which may suit them better.

Now if we examine the characteristics of this Alpine climate, and the curative agencies at work, we find there:—

(1). Great altitude with its attendant low barometrical pressure, and rarefaction of the air.

(2). Great absolute dryness of the air, though not a low rainfall.

(3). Very low temperature of the air, with great sunheat from the increased Diathermancy of the atmosphere.

(4). Great purity of the air, from the absence of both organic and inorganic particles during the period that the ground is covered with snow, *i.e.*, a remarkable aseptic condition of the air, as Hermann Weber terms it.

(5). A rocky and dry subsoil.

(6). A scanty and sparse population.

Of these characteristics there is not one to which alone we can attribute any specific curative power; it is only in the combination of these several factors that the efficacy of Alpine climates, in suitable cases, is due. Yet even with the combination of all these favourable conditions, it not only fails in many cases, but does not even provide any complete immunity from phthisis to the healthy; for in several cases it has been proved that this disease has originated at Davos.

Though there is no one character, unless it be great purity of air, common to all districts which enjoy an absolute or relative immunity from phthisis, yet the most prominent and general characteristics of such districts are:—

(*a*). Elevation and the consequent rarefaction of the air.

(*b*). Purity of the atmosphere.

(*c*). Dryness of the air.

(*d*). A scanty population.

As will be seen above, the Alpine districts

possess all these characteristics during the winter months; we may now enquire more fully into them.

(1). *The altitude.*—The mean barometrical pressure at Davos is only about 24·80. The effects of lessened barometrical pressure on the body at such moderate heights as that of Davos, 5,125 feet, are not easily separated from the effects of temperature and humidity, which are so much influenced by elevation, directly and indirectly. Respirations are increased both in number (at first) and in depth, to supply the amount of oxygen required by the body; for there is a lessening amount of oxygen in a given measure of air as elevation increases; though it is said that up to a height of 10,000 feet, there is an excess of oxygen in the air over the amount that the blood can absorb from it when respired. The number of respirations, however, is rarely permanently increased (according to Dr. Ruedi, in only 5 per cent. of cases), for as a rule after acclimatisation, the respirations return to their normal number or are even lessened in number; but to compensate for this their

depth is increased; thus bringing the respiratory muscles into more active play, and thus, as has been amply proved by Dr. C. T. Williams and others, the chest becomes expanded and shows an increased measurement of even two to three inches. There is also an increased flow of blood to the skin, thus improving its nutrition and strengthening it against chills. The rapid healing of cuts and wounds of the skin has often been noticed. Marcet has proved that under diminished pressure the oxygen finds its way into the blood with increased readiness, and the carbonic acid also passes out of it with a greater degree of facility. He also found that the actual amount of carbonic acid expired at high elevations was increased. There is, therefore, improved sanguification, and the general nutrition is promoted.

The practical efficacy of altitude in consumption, was proved long before the Alpine winter cure was advocated or came into fashion. For a couple of centuries the inhabitants of Mexico and of South America, have known and taken advantage of its beneficent effects, and it has been their cus-

tom for this long period, to go to high ground in the plains of Mexico, or to the high valleys amongst the peaks of the Andes. In these regions altitude is unaccompanied by cold, there being great equability of temperature, and but little difference between summer and winter; the mean annual temperature of Santa Fé de Bagota at an altitude of 9000 feet being given as 57° F., while the temperature of Quito (9352 feet) is 59° F. in January, and 60·5° in June! These places of long proved efficacy in the treatment of consumption, possess a climate contrasting in many respects with that of the European Alpine resorts, though both possess high altitude and rarefaction of the air. This shows, therefore, that the intense cold of the Alpine winter is not such an important factor in the cure of the disease as is sometimes thought to be the case. These South American resorts, however, are lacking in two great desiderata for Europeans, namely, accessibility and good accommodation.

Though the importance of altitude is thus seen to be very great, it is not a *sine quâ non* in the cure of phthisis; for we find

immunity from it on the Tartar Steppes, which are below the sea-level, and the curative power of sea air is well known.

(2). *The humidity*.—The annual rainfall, the number of days on which the rain falls, and the relative humidity at Davos are all high, being about 43 inches, 157 days and 83 per cent. respectively; but, on the contrary, the *absolute* humidity of the air is very low.

Now, the relative humidity of the air indicates the actual percentage of moisture in the air relatively to the largest amount it could possibly contain at the temperature at which it has been calculated, without depositing moisture in the shape of fog or rain. So in meteorology, the results obtained by estimating the relative humidity are of great value. It is also of importance, physiologically speaking; for of course a relatively dry air at any given temperature can absorb more moisture than damp air of the same temperature, though this aspect has a tendency to be ignored by the advocates of cold dry climates, with a high relative, but with a low absolute humidity.

The influence of the relative humidity has as great an effect on the action of the skin as it has on that of the lungs; for the drier an atmosphere (relatively) may be, the greater is the evaporation from the skin as well as from the lungs.

The absolute humidity, however, is the absolute quantity of aqueous vapour which is suspended in a given volume of air. The lower the temperature of the air, the less must be the absolute humidity, whatever the relative humidity may be, for the former varies directly with the temperature. Thus, though the relative humidity of Davos is much higher than that of Madeira, the absolute humidity is far less; and it is absolutely as well as physiologically drier, for the air can absorb far more moisture from the lungs, because the temperature at the former place is so much lower than at the latter, while the body temperature is the same in both.

The air in passing through the lungs is always raised to a temperature approaching that of the body, whatever may have been its temperature when inhaled. The percent-

ages of relative humidity when applied for physiological comparisons, should therefore always be reduced to a uniform temperature. "Thus the relative humidity of Davos is 83·8, and that of Madeira only 69·7, but if these are reduced to the temperature of the body, Davos has only 7·1 per cent., and Madeira 22·8 per cent." (Dr. Reimer). The absolute humidity is therefore the best standard to take with respect to the influence of the air of a climate on the pulmonary respiration, for the facts and figures so obtained remain invariable, and are always at once available for comparison. Though "moisture *per se* does not occasion an increase in phthisis" (H. Weber), yet as a rule localities possessing an immunity from phthisis, are characterised by considerable dryness of the air, *e.g.*, high altitudes and dry inland plains. To this, however, there is a great exception, which proves that dampness of the air is not necessarily accompanied by an increase of phthisis, and that is, the curative power of sea air and the immunity from phthisis enjoyed by certain sea-girt islands, such as the Faröe Islands,

as well as as the rarity of the disease among our seafaring population generally.

(3). *The temperature.*—The low winter temperature experienced in the Alpine resorts, has a very decided influence on the body, causing a greatly increased loss of heat, both through the lungs and skin.

In healthy persons this stimulates tissue-change throughout the body, causing improvement of appetite and greater muscular and nervous vigour. But it must be remembered that these results do not by any means apply to the old, to the weakly, and to many who are organically unsound. In them, cold instead of stimulating, only depresses the vital functions. Again, "dry air combined with a very low temperature irritates the respiratory organs and produces in them a tendency to inflammatory affections, particularly to pneumonia" (H. Weber). Thus it is, that inflammatory affections of the respiratory organs are more frequently a cause of death in mountain districts than in low lying ones. As has been noted under the effects of altitude, the intense cold of the Alpine winter does not seem to be an all-

important factor in the cure of the disease. The chief benefits from it being its power of causing (*a*) greater dryness of the atmosphere, and (*b*) greater purity of the air. The ground being covered continuously with snow, prevents all emanations from it, as well as the raising of dust; and the low temperature also diminishes the power of low organisms to grow and multiply. But to many constitutions it brings attendant evils, by depressing the vital functions of the weakly and by increasing the liability to inflammatory affections, thus neutralising much of the good such persons might otherwise have obtained through the other favourable agencies. Through what Dr. Denison has named the "diathermancy" of the air, the sun temperature in Alpine regions and on high elevations generally speaking, is relatively very high to the shade temperature, and absolutely so to that of places at a lower elevation. For Dr. Denison found by the researches he made in Colorado, that the sun's rays are transmitted with an increased facility through the rarified air of high altitudes, which causes an increased differ-

ence between the sun and shade temperature of 1° F. for every 235 feet in altitude. But Volland has shown by comparison of the results obtained at Davos and at Strassburg, that it is only in winter that there is this excess of sun temperature in favour of the Alpine regions; for in summer he found that it was greater at Strassburg than at Davos.

(4). *Great purity of the air and its aseptic condition* —For any place or climate to prove efficacious in the treatment of phthisis, purity of atmosphere, both from organic and inorganic material, is essential. One has only to look at the disastrous effects on the lungs caused by certain trades and employments, to have ample proof of the injurious and irritating action of dust on the delicate air-passages; thus there is coal-miners' phthisis entirely brought on by the constant inhalation of coal dust. Masons, knife-grinders and others suffer in the same way.

Now, great purity of the atmosphere is a prominent character of both mountain and sea air. In mountain districts this feature

is more marked during the winter than during the summer season, for then not only is there the same rarefaction of the air allowing the particles of dust to be more quickly precipitated from it, but the intense cold—as has been mentioned above—diminishes the developing power of low organisms, and through its keeping the ground continuously covered with snow, all noxious emanations as well as all dust are prevented.

(5). *A rocky and dry subsoil.*—The Alpine regions are characterised generally by a rocky subsoil, and provided that the health resort is not situated on the peaty and often boggy land at the bottom of a valley too near the lakes or rivers, but on a slope or slight elevation above the base of the valley, as at Davos, St. Moritz or Pontresina, the subsoil is, as a rule, remarkably dry. That this is a really important point in the treatment of phthisis, has been proved by the fact that a damp ill-drained subsoil has really a close connection with the development of phthisis, not only in isolated instances, but in the case of whole communities and districts.

Thus, as Dr. Buchanan has shown, the prevalence of phthisis has greatly diminished in Salisbury and other places since the improved system of drainage has been instituted.

(6). *A scanty and sparse population.*—That the overcrowding of dwellings and the aggregation of large masses of population are a fruitful source of consumption, is now well recognised; and the existence of only a scanty population is almost universally a characteristic of those districts which have an entire or comparative immunity from phthisis. In every country the mortality from phthisis in the country districts is smaller than in the towns, and it progressively increases in direct proportion to the density of the population. Also this is typically seen in the comparative rarity of the disease in mountainous districts, which are never thickly populated; as well as on the Tartar Steppes, and on the plains and deserts of Arabia and North Africa, inhabited only by Arabs and other nomadic tribes. Other factors, of course, such as occupation, altitude, a dry climate, and so

forth, also come into play in all these instances.

Having examined the characteristics of the Alpine climate and their most apparent and important actions on the human economy, let us now consider the indications and contra-indications for sending patients to Davos and to other Alpine resorts. Though these have often been discussed, yet considering the misapprehensions still existing on some of these points and the manifestly inappropriate cases sent there year after year, it may not be amiss to restate them afresh.

Cases should be chosen with great care, and invalids should not be indiscriminately sent off to this climate without a clear and definite examination of the patient's *constitutional* condition; for even after eliminating many cases which are manifestly inappropriate, there are many who are sent there every year who should presumably do well, and who yet derive harm instead of good by a residence there.

The *general* constitutional indications for sending patients to an Alpine winter,

are:—(*a*) that they must have good circulation; (*b*) that they are able to bear cold well; (*c*) that they have a good general physique; (*d*) that they are comparatively young; persons under forty or so generally doing very much better than those more advanced in life. Children are an exception, however, for it is generally recognised that sea air suits them better than keen mountain air.

The opposite conditions to the above, as well as other specific diseases or tendencies, generally contra-indicate a residence in an Alpine climate. Thus, it should be avoided (1) by those who have weak circulations, whether due to actual heart disease or not; (2) by those who suffer from or feel the cold at home; (3) by those who are getting on in life, and generally speaking by the weak and infirm; (4) by those who have a liability to inflammatory diseases; (5) by those with kidney disease; or (6) by those with a tendency to brain affections such as epilepsy or apoplexy.

Cases of catarrhal phthisis frequently do better in a warmer climate. There seems a

tendency in the Alpine winter to induce albuminuria, and I have heard of several cases where profuse and persistent albuminuria has ensued on a residence at Davos. If this observation is borne out in any considerable proportion of cases, it will prove a disadvantage to the Alpine treatment.

The *special* indications for sending patients to Davos are :—

1. A predisposition to phthisis.

2. Convalescence from acute and exhausting diseases. It is especially useful in expanding the lung after pleurisy, and in stretching and neutralising the effects of old adhesions.

3. Cases in the first and second stages of phthisis, "those who have single cavities or limited consolidations; genuine primary phthisis comes round best" (one is tempted to ask, where is this not the case?); "but on the other hand, those far advanced, with much fever and double cavities, not unfrequently do well" (C. Allbutt).

It is therefore very difficult to decide against allowing a patient to try a residence there; the great criteria to my mind being

the power of the circulation, and the liability to intercurrent attacks of pleurisy or bronchitis. A poor circulation, with or without any organic disease of the heart, being entirely inimical to a residence in Alpine climates. Dr. Burney Yeo, in his excellent work on "Climate and Health Resorts," goes to the root of the question when he says, "regard must be had rather to the constitution and temperament of the individual than to the mere amount of local disease." It is most painful to see some of the patients sent there only to be literally killed. I know of two cases sent by a London consultant in one week, who both died from heart failure within a few days of their arrival. One of these, an elderly gentleman, remained in a constant state of severe dyspnœa from the time of his arrival until his death, which occurred within a few days; he never recovered from his rapid ascent, for he went straight from London to Davos without a break, and in the shortest possible time. Now, surely, the condition of his heart as well as of his lungs should have been examined and taken into consideration; for

if he had been sent to the Riviera or Madeira, he would in all probability have done well. If there had been any doubt after carefully considering his case, and yet on the whole the Alpine climate seemed advisable, he should at all events have been cautioned of the danger of making a too rapid ascent.

4. General weakness and debility, or to again quote Dr. Clifford Allbutt, "These regions offer great curative advantages to many others besides phthisical cases; pallid, ill-nourished young men and women, and older men and women overworked and worn by care, cases of indefinite debility and many others needing a stimulant to nutrition and change of scene and thought, and to these many places are available; but not so to the phthisical, to them Davos has undoubtedly the advantage."

It is no great argument in favour of Davos to say that a larger proportion of cases sent there get cured than elsewhere; for it *ought* to have the best results and the greatest percentage of cures from the very class of patients sent; in fact it would be

very bad if it were not so. It has a very unfair advantage, in this respect, over other warmer and less trying localities; for, apart from the *stage* of the disease, which may be stated in statistics, it admittedly gets all the strongest cases—those with the best circulation, the best physique, the best digestion, and other favourable factors, all of which are conducive to recovery.

In the Alpine winter cure of phthisis there certainly seems a good deal of the "kill or cure" system. Not unfrequently sad, sudden and unexpected deaths occur in persons who would have in all probability continued to live for some years in a less trying climate; while, on the other hand, real cures may sometimes be effected there, instead of the mere palliation, which might have been the effect in a less stimulating and invigorating climate.

This question, therefore, often presents itself:—Is it justifiable to run some risk with the hope of obtaining an absolute cure, just as it is right to urge a serious surgical operation in which there must necessarily be some risk incurred, but where there is

reasonable ground to hope for an ultimate cure? The answer seems to be that such risk as does undoubtedly exist in some cases may be ignored, if only the patients are not urged to remain, but are ordered to descend at once to a warmer climate if it does not manifestly suit them. In this respect the Maloja has a great advantage over Davos, for the descent to the Italian lakes may be made from the former at once, without the difficulty and danger of a long coach or sledge drive over some pass, as from the latter.

The importance of constant medical supervision in phthisis, at all events in its more active stages, is, as a rule, scarcely sufficiently recognised; but it is so at Davos, to which fact I think some of the credit of the place is due. As a certain fee is charged for the season to those patients who put themselves under the care of a local physician, all scruples of the medical man in constantly looking in upon his patients, whether sent for or not, to see if they are doing well, are avoided; and, not only so, but the patient himself does not then feel

that the doctor is paying him what he often imagines to be unnecessary visits.

The plan in the Riviera is very different; and it would be well if the physicians there, and in other similar resorts, would adopt the above plan as a working rule, though of course exceptional payment should be made in cases requiring an exceptional amount of care and treatment. As it is now, a napoleon is charged for a visit, and the invalid who has probably already been put to much expense and inconvenience in his business matters and so forth, endeavours to do as long as possible without calling in a doctor. Thus a slight relapse or catarrh is allowed to work mischief, and gain an firmer hold on the patient before the doctor is summoned. When one hears tales of the physicians charging a napoleon or a guinea for a casual word in the street, or on passing on the stairs of an hotel (this is a true fact, not a mere hearsay) a mere "how are you to day?" it is not to be wondered at, that patients who have to pay any attention at all to their expenses, and they are the vast majority, feel shy of call-

ing in the doctor till they are absolutely obliged to do so.

The question whether a patient should return home to England from Davos during the summer is often discussed; and it seems a harder question to answer in reference to Davos than to many other resorts. I have known cases of phthisis which have improved rapidly, perhaps a stone weight being gained, after returning to a comfortable English home from a sea voyage, or after a winter spent in some much vaunted foreign resort, where good and appropriate food was not attainable, and the cooking repulsive to an English palate. On the other hand, one only too frequently hears of the harm done to many patients by returning to our fickle English summer. Amongst the physicians at Davos the rule apparently is, that if the patient is doing really well and improving nicely, he should not return to England during the summer to run the risk of losing the start he has obtained; but that if he has not improved, or is depressed and despondent, it is best to let him have the change home; while at the same time

he should be urged not to relax the hygienic discipline he has been kept under during the winter.

It seems to me, however, that the decision should always greatly depend, firstly, on a patient's home surroundings—for instance whether he lives in the town or country, in a dry and healthy, or in a damp and unhealthy district; and, secondly, on the patient's own character and habits, *i.e.*, whether he will probably be careful and continue the daily strict routine impressed upon him by his physicians, or whether he will enter into doubtful amusements and over-exertion; whether he can refrain from going to picnics, and so forth, where he must incur the risk of getting wet through in our variable climate.

As to the questions, when should patients take up their quarters in the Alps for the winter, and whether they should leave during the snow melting period in the spring, there is some difference of opinion. Nominally, the winter season begins on the 1st of October and lasts till the end of March, and patients are often

urged to commence their residence there not later than the first week in October, in order that they may become acclimatised before the winter cold sets in. However, many do not arrive till much later, not indeed till the end of November, or even far into December; and this will probably be more frequently the case when the railway is open, as it will obviate the dangers of being snowed up on the way from Coire or Ragatz to Davos. By going up so late in the season their length of residence in the rarefied air of the Alps is of course shortened, and too brief a period is left to confer much benefit in a disease such as phthisis, which requires so much time and patience for its amelioration. But I did not hear of any bad effects wrought on those who arrive so late in the season, while they escape a great deal of exceedingly bad weather during the on-coming of the winter, and before the real "snowing in" takes place. It is admitted also by the physicians that the chief benefit is obtained, and most cures effected, during the three months of January, February and March. There seems, therefore, no

reason why patients should not be sent up late in the season, if it is thought advisable on other grounds.

The fine and settled winter weather usually breaks up towards the end of March, when a large proportion of the invalids take their departure. Till the last few years this course has been recommended by the medical men there, but now their opinion is altering in this respect, and many patients remain during the melting time of the snow and the unsettled spring months without any detriment. One reason for this change of opinion seems to be the great difficulty of finding a really satisfactory place, and one which is sufficiently accessible, for patients to go to during this, the most trying time of the whole year. The Italian lakes, Montreux, Les Avants, Meran in the Austrian Tyrol, and other places, are recommended. As for myself, I tried Meran and found it most decidedly *wanting*. The winds were cold and strong, the dust simply awful, so that occasionally one could not see the houses on the opposite side of the road, and the whole landscape was blotted

out with dense clouds of it. On one occasion this lasted for two or three consecutive days! However good, therefore, Meran may be as a winter resort, it is not a satisfactory place in spring, on account of the cold north winds which sweep down the valleys of the Adige and Passer, raising such clouds of dust, and which often bring snow low down on the mountains. Montreux and Les Avants, being so near such a large body of water as the Lake of Geneva, are considered rather too damp for those who have been accustomed to such a dry air as that of Davos. Invalids also frequently descend to Thusis and Ragatz, and stay there while the snow is melting on higher levels, or till they can return to England; these places are, however, undoubtedly unsatisfactory, as indeed is almost every locality in Central Europe during spring time, the most trying, windy, and unsettled time of the whole year.

Consequent on the recognised fact that elderly people do not do well at Davos, the majority of visitors and invalids are young persons, and therefore there is more gaiety,

dancing, etc., in the hotels, and more active pursuits such as skating and tobogganning out of doors than in most health resorts, and the delicate are often induced prematurely to join in these hard exercises to their lasting harm. There can be no doubt that too great exertion is as harmful for the phthisical, on the one hand, as the falling into invalid habits is on the other.

The exertion, for instance, of dragging a toboggan up a long incline is very great, and while this ascent is very heating, the rushing down at the rate of half a mile a minute through the keen air is most chilling; so that though it may be an excellent exercise for the strong, it should not be indulged in by the phthisical without the precise sanction of his doctor. Very much the same may be said of the "dances," which are so much the fashion, except that they have the additional evils of being carried on in the close and necessarily vitiated air of the hotel rooms, and that the participators in them dress in much lighter clothing than they have been wear-

ing during the day; then after becoming heated with the exercise in a room at a temperature of between 70° and 80° F., they go out in the night air at a temperature of zero.

It is impossible to keep some ladies away from this amusement, for if there is a dance taking place in any of the hotels, they will dance all the evening in spite of the doctor's strictest orders to the contrary and suffer for days after in consequence.

Some minor complaints have to be faced at Davos; while certain of these, such as chilblains and frost cracks (though it is sometimes denied that these are frequent, yet some persons who are not troubled with them during an English winter suffer from them there), are only disagreeable, there are other minor ailments which do retard the progress of some patients. Bad sore and ulcerated throats are far from being uncommon, an indication against sending patients there who are subject to inflammatory conditions of the throat.

Again, neuralgia and bilious attacks are very prevalent, and though perhaps not

serious in themselves, are very disagreeable, and often retard the patient's progress.

English doctors, and English people generally, will understand what is meant by "bilious attacks," though many German physicians deny that there is such a complaint, and declare that Germans know no such ailment, and that if English people have a pain anywhere they put it down to "biliousness."

The choice of a room is most important, more so perhaps than in any other class of health resorts. It should always be firstly, a south room, and secondly, as large and airy as possible, with two windows if possible, as by these means ventilation can be so much more efficiently carried out without causing injurious draughts. Nowhere is good ventilation without draught more difficult; nor is there any place where it is more necessary, for the air in the rooms seems so quickly exhausted, and, to use an expressive term, they very rapidly become "stuffy."

It only remains now for me to say a few

words on the other popular neighbouring Alpine winter resorts, viz., St. Moritz, Wiesen, and the Maloja.

St. Moritz, as I have before incidentally mentioned, is relatively much more exposed than Davos, and is also nearly 1000 feet higher, so that it is still keener than Davos.

Absurd as it may appear, I have heard persons coming from St. Moritz complain that Davos, with perhaps 20° F. of frost, was *relaxing*, and that, therefore, they could not do so much there as at St. Moritz! Is not this a lesson to those at Davos not to talk of the Riviera in the disparaging way they do, on account of what they allege to be its relaxing and debilitating influence? St. Moritz from its greater altitude, its greater degree of cold, and from its more exposed condition is, therefore, still further confined to the more robust and stronger class of patients. The Maloja hotel affords some advantages to the invalid (as has been stated in Chapter I.) in the way of good ventilation, the variety and fineness of its reception rooms, the spaciousness of its corridors, and the ease with which the

descent into Italy can be affected, but it has two disadvantages:—first, the windiness, and secondly, the lowness of its position, it being placed only a very few feet above the level of the lake, between which and the hotel is some marshy ground, though this is not so important during the winter as during the summer months.

Wiesen, situated in a valley eleven or twelve miles below Davos, and 350 feet lower, can never become a popular or large resort on account of its more confined space; but it just affords that slightly greater degree of warmth and shelter which the more delicate patients may require, it being about as much more protected than Davos, as St. Moritz is more exposed.

FUNCHAL.—MADEIRA.

CHAPTER IV.

Madeira.

It is scarcely surprising that Madeira has been more or less neglected of late years as a health resort for invalids, since the very antithesis of the climatic treatment obtained there, viz., that of sending patients to the rigors of an Alpine winter, has become so popular, and of such proved efficacy in very many cases where phthisis occurs in those with a good circulation and strong physique.

It seems, however, to be felt, though perhaps yet scarcely acknowledged, that this remarkable swing of the pendulum in the medical treatment of phthisis has gone too far; else why this rush to the Canary Islands, why this anxiety to try their climate in such cases—a climate so very similar to that of Madeira, and yet so very dissimilar to that of Davos?

Madeira was at one time most popular as a health resort, but it has lately gone very much out of favour with the profession. The sending of a selected number of cases from the Brompton Consumption Hospital to pass a winter there, who unfortunately did not on the whole do well, seems to have helped to give the island its "coup de grace" for such invalids. This occurred some twenty years ago or more, just before the attention of English physicians was being drawn to the wonderful results said to be obtained by sending such cases to spend a winter at a high altitude, amongst the the snows of the Swiss Alps. Madeira, therefore, went more and more out of fashion as the Alpine treatment of phthisis came into fashion; and by this great oscillation of medical opinion, cases for which the climate is eminently suited, have been sent to languish in the great cold of an Alpine winter.

At the present day but little seems known of the climate of Madeira amongst the medical profession at large. When a London specialist on this subject describes

the climate to be like the atmosphere of the "hot and well-steamed room of a patient suffering from bronchitis," one can see how little its real climate is known and appreciated. That may be a very good theoretical description of the climate, but it certainly is not a correct one. Such days as are here portrayed do occasionally occur, and then the weather is very enervating; just as when the Föehn occurs in Alpine districts, or when the so-called Sirocco of Italy and the Mediterranean blows, the visitors and inhabitants alike of these districts feel enervated and depressed. But to describe these conditions as the normal state of the climate would be unfair and misleading.

Again, Dr. More Madden, writing on the climate of Madeira, says:—"The extreme humidity of this climate is shown . . . . . by the exuberant tropical vegetation which attracts the admiration of every visitor to this island, and which, as rain only falls in small quantities and at very long intervals, must be maintained by the excessive humidity of the atmosphere."

This argument from the richness of the vegetation of Madeira is constantly used as a proof of the excessive humidity of the climate ; but, as a fact, no such conclusion necessarily follows, since in the first place, the richness of the vegetation is exaggerated, and in the second place, what there is can be accounted for without assuming that there is an excessive degree of humidity. The amount of rainfall during the winter months (October to March, 25 inches) is amply sufficient to keep vegetation green and flourishing in the moderate temperature which prevails during these months, namely, 63° F. ; while irrigation is constantly employed for growing crops during the rest of the year. Semi-tropical plants doubtless grow with luxuriance in the gardens of the numerous villas which surround Funchal, because they are incessantly cared for.

During the Madeira summer the growth of all plants that are not of a shrubby or arboreal nature, and therefore of a deeply rooting character, is almost entirely at a standstill for lack of moisture ; herbage is entirely burnt up, while ordinary garden

plants cannot exist without continual supplies of water. These remarks of course refer only to the lower parts of the island which is the resort of invalids. On the higher lands there is a much greater degree of dampness, and mists are frequent from the condensation of the moisture in the atmosphere caused by the cooling effect of the higher mountains upon the air.

The four and a half days at sea necessitated in getting to this favoured and delightful island will always be a stumbling block in the way of many an intending visitor, more especially if he happens to be an invalid; and many would choose a less suitable climate and all the fatigues of a long railway journey rather than brave those few days at sea, notwithstanding the splendid vessels of the Castle and Union Lines of Steam Ships in which they may take their passage, and in which they will find every comfort and convenience as far as that is possible at sea.

What will be considered additional drawbacks by some, are:—that the language spoken is Portuguese, a language known

by comparatively few people; that the duties at the Custom House are very high; and that there is only a weekly post with England. One, however, quickly gets used to all these; the discomforts of the sea are soon forgotten in the delicious sunshine and balmy air; most necessities are cheap, and after once landing, the Custom House acts no longer as a nightmare, except to those about to set up house-keeping on their own account, and who are desirous of importing articles of furniture; and mail day soon seems to come round so quickly that it is quite an effort to get one's letters off in time, and one begins to wonder how people manage when they have two or three mails in and out *per diem*.

Madeira, as far as the invalid is concerned, practically means its capital, Funchal, with its suburbs stretching along the shores of the lovely bay, and up the slopes of the amphitheatre of mountains, which encircle the valley in which the town lies.

As Funchal, with the bay on the shores of which it is situated, faces nearly due South, it obtains all the sunshine and warmth

possible during the winter months, and is well protected from the cool Northerly winds by the high and imposing range of mountains which rise behind the valley to a height of 4,000 feet, clothed nearly to their summits with verdure. They are cultivated on the lower levels with vineyards and with the sugar cane, and then with patches of various kinds of grain to a height of 2,000 feet, after which, instead of cultivated land, there are plantations of pine and chestnut. To the East, the bay is bounded by the cliffs of Cape Garajao or Brazen Head, and to the West, by the Ponta da Cruz, a few miles beyond which tower the noble cliffs of Cape Girâo, nearly 2,000 feet in height.

The landing from the steamers in small boats is a disagreeable process, especially in rough weather, as there is not only a good way to row to and from the steamers, but the boat is beached on the sloping shore, and is then dragged up by oxen. One may be a little splashed in the process, but it is quickly and skilfully done, and little harm is experienced even by an invalid.

In really rough weather the landing is

effected at the Pontinha, which now affords a very sheltered place for disembarkation since the new breakwater connecting the Pontinha with the Loo rock has been built. Though the streets are kept fairly clean and are said to be vastly improved from what they used to be, still they are narrow and confined, and afford by no means desirable promenades for invalids. They are well drained by covered sewers, but unfortunately this does not obviate the existence of many a foul odour. They are, however, no worse and very much better, in many cases, in this respect than many continental towns. The new Gardens and Constitution Square are nice open spaces, easily accessible from the hotels situated in the town ; and where the band plays twice a week.

The water supply, though efficient in quantity, must be declared, as far as drinking purposes are concerned, with the exception of one spring, decidedly defective in quality. The best water, and the only supply which is really fit for drinking purposes, is that obtained at the fountain close by the Governor's Palace, and nearly all the English

and other foreign residents send there for their drinking water. When the carriers have to bring this water a long distance they are not always to be trusted, and have been known to get the water from inferior springs on the way. This may be one way in which typhoid fever, which is too common in Funchal, is spread. Those, therefore, who take villas for the season should be very careful as to whom they employ for this purpose, and they should, moreover, for safety, boil all their drinking water. If, after boiling, it is passed through a carbon filter it loses its flat and insipid taste. From the very position of the spring, which is thus so much relied on, and even though the water from it seems really good, yet it must run a great chance of pollution, as it has to traverse subterraneously the whole length of the town.

The roads and streets are paved with rounded pebbles from the beach, which are often known by the elegant term of "petrified kidneys," and are generally much disliked by pedestrians, especially by those given to wearing very thin boots. There are very few level pieces of road to be met with

around Funchal, in fact the new road to Camara de Lobos is the only flat road there is. This is a great drawback, for the invalid especially, as the roads are all too rough and too steep for any wheeled vehicles to be used at all. Their place is, however, taken by two very convenient but very slow methods of conveyance, namely the hammock and the bullock carro or car. The former is slung to a long pole which is carried on the shoulders of two men, and is a very easy and comfortable means of conveyance, tending perhaps to encourage too much the lazy proclivities of the healthy, but invaluable for the invalid who can thus always obtain fresh air and passive exercise without fatigue or over-exertion. It is simply marvellous the distance and length of time the bearers can continue to carry a person in a hammock without having to rest; and though they evidently find it very trying for their "wind" up the steeper inclines, yet they deem it quite *infra dig.* to rest, and appear quite offended at such a proposal.

The bullock carro is drawn by a pair of

oxen and is capable of seating four persons; though there are some smaller and lighter ones for only two persons, which are generally used for the longer excursions out of the town. They run like a sleigh instead of on wheels, and though rather slow are safe and comfortable, and run smoothly.

Riding horses are easily obtained, but all the roads except the one above mentioned (the new road—which is the favourite riding road), being paved and mostly very steep, the riding is decidedly trying for many invalids. Riding, indeed, in Madeira, is only undertaken as a means to an end, *i.e.*, that of getting about. It is not a pleasurable exercise as in most countries; for one can never go out of a walk, or amble, and even that is jerking and disagreeable from the steep paved roads, and the way the horses have to be shod in consequence, to prevent them from slipping—somewhat similarly to the way horses are "roughed" in England in frosty weather. Walking, too, for the same reasons, and on account of the great heat of the sun, and the narrow roads shut in on either side by high stone walls, is unin-

teresting and tiring in the extreme. So much the greater, therefore, is the importance of the position of his hotel to the invalid. The importance of this is scarcely realised at home, nor perhaps by the casual and healthy visitor, especially if he has been accustomed to a town life; but it is of primary importance to the invalid, when he has to be imprisoned there for six or seven months, and is forbidden to take long excursions, or is unable to do so from physical weakness. A nice piece of garden, a level shady road, or a prettily laid out public park or garden near, and even a pretty and interesting view from his rooms, or from the verandah of the hotel then become assessed at their true value.

This leads one to speak of the accommodation that Funchal provides for its visitors. There are numerous villas or Quintas (pronounced Kinta) available for families, which are let furnished by the season at reasonable prices, in good positions, and at various elevations, which are a great convenience for large parties. Plate and linen, however, are not supplied, and these have to be

brought out by those who are intending to take a house. But the majority of visitors do not wish to go to the expense of a private villa, or to have the worry of foreign servants, and all the other troubles setting up housekeeping in a strange country involves. To them, therefore, the hotel, its position, its surroundings, and its management, are of primary importance; for on these will greatly depend not only the comfort of, but also much of the benefit obtainable by, the invalid. Inferior food and bad cooking often mean failure of appetite and lack of due nourishment; while a bad position often means loss of exercise, a deficiency of fresh air, a lack of interest, and often, therefore, lowness of spirits and home sickness.

Funchal has suffered in the past (just as the Canary Islands are doing now) from the position of the hotels; for I feel convinced if they had been more judiciously placed in the fresher and more airy outskirts of the town, instead of in its narrow and hot streets, so many complaints of the climate being enervating, oppressive and relaxing,

would never have been heard. Without entering into the merits of the several hotels, I may say that all the proprietors lay themselves out in a most unusual way to meet the wants and requirements of invalids. Indeed, it is very rare to find in any of the hotels of the many health resorts of the Continent (and I speak from experience) such consideration and attention paid to the invalid as is done here. The Santa Clara is the largest and best known of the hotels, and being in the town it is more central, but its situation is not so good for those who come for health as either of Cardwell's hotels, both of which are excellent in every way; or Jones', which is also in a good, open, and airy situation, with a large garden.

All the food supplied is generally very good, whether fish, flesh, or fowl. Fish is plentiful and fresh, and rarely unobtainable, but most kinds are rather tasteless in comparison with the fish of our cooler and shallower seas. Both cows' and goats' milk are obtainable in any quantities, the latter being particularly nice and quite free from the

strong and disagreeable "goaty" flavour so generally associated with that animal's milk. The goats are milked at the door, so that it can be had two or three times a day quite fresh and warm. If taken this way it is certainly lighter and more easily digested. Fresh vegetables are always plentiful, and can be obtained all the year round, and resort has not to be made to tinned vegetables so often used on the continent. Fruit is always obtainable, and exists in wonderful variety. Bananas are always in season; strawberries are procurable from February far on into the summer; then oranges, loquats, figs, mulberries, the edible fruit of the Passion flower, grapes, pears, apples, plums, prickly pears (Opuntia tuna), guavas, avocado or alligator pears (Persea gratissima), mangoes, custard apples (Annona reticulata), pomegranates, and the Cape gooseberry, all come in their season. Amongst the other advantages of Funchal, are the splendid English library and reading-rooms. I know of no foreign resort which has their equal, and they are a great resource and rendezvous for visitors.

Mosquitoes are said to be entirely absent,

but this certainly is not the case. They are, however, not so numerous, and are never a pest, as in the Riviera or in Las Palmas.

The climate of Madeira has been a great deal discussed in past years, and much variety of opinion has been expressed upon it, one calling it enervating and depressing, and "like the steamy air of a patient's room who is suffering from bronchitis;" while another authority speaks of it as "La première résidence hivernale du monde;" and the late Sir James Clark speaks of it in much the same terms. There is much variety, too, in the results obtained by observers, which is due (1) to the variety of instruments used; (2) to the district, and altitude of that district, in which the observations have been taken; (3) to the number of seasons which the record covers—an abnormally hot or cold, an unusually dry or wet season, influencing the mean of three or four years' observations very materially; but (4) and chiefly, the variations are caused by the *position* of the instruments. For instance, there is a considerable difference between the readings of a thermometer

placed in a shady verandah looking North, or on a cool North wall, to one placed in a Stevenson's screen with the full blaze of a hot sun upon it, as is the regulation of the Royal Meteorological Society of England; while the former seems generally accepted as the best position for amateur observers who do not care to be encumbered with a large screen on their travels. Now, as the difference between the maximum readings in these different situations may be several degrees, while the minimum will vary but little, it accounts to some extent for the exaggerated idea which obtains as to the great equability of the temperature as regards the daily range, which H. Weber gives as only from 7° to 9° F.; Heineker and Renton, for six years' observations, give it as varying from 10° to 11° F.; while I make it for the seasons of 1888 and 1889, nearer 12° F. Thus, with Casella's instruments, Kew certificated, and placed in a regulation Stevenson's screen, the average minimum for March 1889 was 54° F., and the mean maximum 66·7° F., giving a mean daily range for the month of 12·7° F. Again,

the average minimum for April, 1889, was 54·5° F., and that of the maximum 67·3° F., or a difference of 12·8° F.

For the last twenty-three years the reports taken at the Official Meteorological Office in Funchal are available, and the following particulars, as published by Mr. Yate Johnson in his handbook for Madeira, are taken from that source as being more uniform, and covering a longer period than the results obtained by other private observers. The mean daily range is there given as 9·4° F. The mean annual temperature, according to the official returns for the nineteen years, 1865 to 1883, is 65.7° F.; but this is not of much value from the medical point of view; for a place with a very hot summer and very cold winter, *i.e.*, a locality with great extremes of temperature, may give a mean annual temperature very similar to another with a cool summer and warm winter temperature, and yet the climates are really a great contrast. Thus the mean annual temperature of Dublin, for instance, is 48·4° F.; while that of Odessa is 49·3° F.—within less than

a degree of difference; and yet the mean winter temperature of Dublin is 41·4° F., while that of the latter is 28·2° F., or 13·2° F. colder, and the summer is correspondingly hotter. When compared with the health resorts of the Riviera we find the mean annual temperature of Madeira only 4·7° F. warmer than that of Mentone, which is 61° F.; while the winter temperature is about 10° F. (10·2°) warmer, and the summer temperature correspondingly cooler.

During the nineteen years from which these figures are taken, viz., 1865 to 1883, the highest temperature recorded was 90·5° F. in July, 1882 (a temperature not unfrequently exceeded in England), and the lowest was 45 6° in March 1883, which is the lowest temperature ever recorded in Funchal. February is the coldest month, with a mean temperature of 60·3° F., being ·18° F. colder than January and March. These three months, therefore, have an almost identical mean temperature of about 60·4° F. August and September are the warmest months, with the means of 72·8° F. and 72·3° F. respectively.

The mean temperatures for the four seasons are as follows:—winter (December, January, February) 60·9° F.; spring (March, April, May) 62·6° F.; summer (June, July, August) 70·5° F.; and autumn (September, October, November) 68·9° F. The most noticeable points about the climate as regards temperature, are:—(1) the small mean difference between successive months, which is only about 2° F.; (2) the steadiness of the temperature from day to day; for instance, sometimes neither the maximum nor the minimum will vary more than a couple of degrees for a week or more together; (3) the small range of temperature in the 24 hours, which may be taken as about 10° F. to 11° F.; though if a Stevenson's screen is used as in England, and as above explained, it is probably greater, for I have frequently seen it amount to 15° F., and but rarely to less than 10° F.

The fall of temperature at sunset is very small but very regular. I have found from numerous observations taken by a thermometer four feet from the ground, in the open, and protected only from the sun's

declining rays, that the average fall from half an hour before sunset till sunset is 2° F., that from sunset to half an hour after it is 1·5° F., and that during the next half hour, from half an hour till an hour after sunset, the fall is only ·4° F. It will, therefore, be seen that the greatest fall is before sunset, and there is no sudden fall immediately afterwards, as in the Riviera.

The mean annual rainfall for these years is given as 26·02 inches, varying from 12·93 inches in 1868, to 49·14 inches in 1867. This mean total fall, however, is probably rather understated, and Dr. Grabham's estimate of 29 inches seems nearer the truth; for the rain gauge at the Meteorological Office is very badly placed. Not only is it put on the top of a building at least 40 feet from the ground, but it is also not sufficiently free from surrounding buildings, a turret rising high above it on one side at only a short distance from it. According to season the rain fell as follows:—winter, 11·31 inches; spring, 5·64 inches; summer, 1·24 inches; and autumn, 7·82 inches. The months of July and August are practi-

cally rainless, and not unfrequently no rain falls in June and September.

The mean annual number of days on which rain was registered was 78. Snow is often seen on the mountains; but it never, or only very rarely, falls below a height of 2500 feet, at least to lie.

The relative humidity is generally considered to be about 72 per cent. The official records for the eleven years 1873 to 1883 (inclusive), taken at 9 a.m. and 3 p.m., give a mean of only 64·3 per cent.

Another record taken at the same hours for the years 1865 to 1872, gives it as 69·1 per cent. The two factors which influence the humidity of the air most, are:—firstly, the "Leste" which reduces it to an abnormally small percentage, and secondly, on the other hand, the occurrence of S.W. or Westerly winds which cause almost complete saturation.

Clouds are a very prominent feature of the climate, and an unclouded sky throughout the day is a rare occurrence, but the nights are as a rule far more cloudless than the days. It is stated that dew never falls

in Madeira, but this is certainly a mistake; I have often observed it, especially during the autumn months, after a clear night. The amount of cloud is large, half the sky being on an average constantly covered. But as the clouds are chiefly to the North, they do not intercept as much sunshine as might have been anticipated. They are of an irregular cumulus nature, or strato-cumulus, and sometimes what has been termed roll-cumulus, but rarely of the true trade-cumulus character. The diverging rays of the sun which stream down from behind clouds like a fan, and which often produce a beautiful effect, and about which there are many diverse legends in various parts of the world, are often observed shortly before sunset in Madeira. They are not very commonly seen in England, and when seen the sun is said to be "drawing water." In Ceylon, these are called "Buddha's rays," and in the Pacific Islands they are called the "Ropes of Maui," the latter being the great hero of the Pacific Islanders, who caught the sun and noosed him with his ropes!

Mists, except on the mountains, are very

uncommon, but occasionally one gets a sea mist driving in with a warm westerly wind. The sunsets are frequently very beautiful, especially during the winter months when the sun sets to seaward.

The barometrical pressure is remarkably uniform, the mean pressure being as nearly as possible 30 inches, but the diurnal oscillations are well marked. Mr. Yate Johnson states that the maximum pressure during the eight years 1865 to 1872 was 30·554 inches, and the minimum 29·083 inches; the entire range being therefore no more than 1·471 inches, so far as was revealed at the hours of observation. The highest barometrical reading I have observed during the year 1888-1889 is 30·45° F., and the lowest 29·54° F. (corrected to sea level), showing a total range of only ·91 inch during the year.

Not only is the barometer remarkably steady in the calm belt of Cancer in which Madeira is situated (lat. 32° 43′), but its mean height in these latitudes is higher than almost anywhere else, which is due to the ncreased pressure caused by the meeting of the polar and equatorial currents of air in

the upper regions of the atmosphere. The cool polar current then descends on the equatorial side of the calm belt to form the North-East trade winds, while the warm air which has risen in the tropics also gradually descends, and continues its course polarward in the form of the South-West winds or counter trades.

As I have just stated, Madeira is situated in the calm belt of Cancer, yet it obtains the benefit of the trade winds during the summer months, rendering the climate then a comparatively cool one, notwithstanding that the shores of the Island are washed by a branch of the Gulf Stream.

The North-East trade winds vary in the latitude at which they commence to blow at this season of the year, *i.e.*, with the position of the sun, commencing in a much higher latitude during the northern summer than during the winter; yet Madeira would scarcely get the true trade winds even during the summer months, if it were not for a special fact. This is that the North-East trade winds commence to blow from a much higher latitude on the Western margins of

the Pacific and Atlantic Oceans, than in the more central and eastern portions. Thus, these winds commence to blow off the coast of Portugal in as high a latitude as 40° or 42° during the spring and summer months; and though this wind does not extend far out into the Atlantic, yet it embraces the Island of Madeira.

From these winds commencing off the coast of Portugal, they are known to sailors as the Portugese trade winds.

During the winter months the true trade winds commence south of Madeira, and though the North-East is still the prevailing wind there, it does not blow with the same regularity as in the spring and summer. It, however, brings the driest and finest weather to Funchal, as any excess of moisture it contains is condensed in its passage over the mountains, and reaches the south side of the Island as a comparatively dry and bracing air, without the trying direct effect of the trade winds, as is experienced for instance, in Las Palmas in Grand Canary.

The North and North-West winds are cool, and often blow up rain and snow on

the mountains, and squally weather in the winter, but do not cause the great humidity of atmosphere which occurs with a Westerly wind. This is a warm wind, and does not blow for more than a few days together as a rule. Though it blows only on a small percentage of days, it seems to have given to Madeira a bad name in England; for it is undoubtedly this wind which has given the island its character for being enervating and depressing. Yet the comparatively cool, bracing and dry (as it reaches Funchal) North-East wind largely preponderates.

Though this North-East wind is not by nature a dry one, yet after having risen over the high chain of mountains in the centre of the Island, where much of its moisture is condensed, it descends again into the valley of Funchal as a comparatively dry wind, with a relative humidity of only about 65 per cent.

There remains for me to mention the "Leste," which occasionally blows from the East or South-East. It is an extremely hot, dry and parching wind: thus differing very materially from what the Italians call a Sirocco, to which it has been likened;

for that is a hot, damp and enervating wind, a great contrast to the "Leste" of Madeira. It far more resembles the Sirocco of Algeria or the Harmattan which blows over the Cape de Verde Islands carrying quantities of dust with it, to such an extent as to cause what is known as the red fogs of that district. This "Leste" arises on the heated deserts of Africa, where, as the air becomes heated and expanded, it rises in whirlwinds into the air, carrying with it quantities of sand and dust to be borne along by it hundreds of miles out to sea above the cooler North-East trade current. It then gradually descends far out in the Atlantic, and is experienced as a hot, dry and often boisterous wind in Madeira and the Canaries, and is often felt more severely on the higher mountains of the islands than in the districts near the sea. The highest temperatures recorded are registered during the continuance of this wind; but even a severe one will rarely raise the temperature over 90° F.; and it generally lasts only three days. It is only severe ones that are at all trying, and they rarely occur;

for being generally tempered by the cooler substrata of air they only cause a pleasant sensation of dry warmth. The discomfort of them has, I think, been greatly exaggerated; for though I have only been in Madeira between one and two years, I have experienced one of the worst that has occurred for several years; the temperature then reached about 92° F. for two days, and the minimum did not go below 71° F. The air instead of being exceptionally *free* from dust, as has been stated, is I believe loaded with impalpable, it may be, but veritable dust. Hence the lovely sunsets frequently experienced at these times,* as well as the remarkable haze which exists. A direct proof also of the presence of fine dust in the air is occasionally seen in the deposit of a thin layer of dust, not only on the

* These unusually brilliant sunsets have been ascribed to electrical phenomena, but from the researches entered into by the Royal Society and the Royal Meteorological Society as to the effects of the great Eruption of Krakatoa, it seems more probable that they are due to impalpable dust floating in the atmosphere.

island, but on the decks of ships far out at sea.

It is a very curious fact that Professor Ehrenberg, of Berlin, has found that this "sea-dust," as it has been termed, collected from ships in the Atlantic, from the Cape de Verde Islands, and even from Malta, Sicily and the mountains of the Tyrol, contained infusoria and diatoms whose habitat is not Africa but South America! Dr. Maury considers this a direct proof "that there is a perpetual upper current of air from South America to North Africa." Mr. Yate Johnson states that he found six species of diatoms in the dust which fell in Madeira on one occasion, after a cessation of a Leste or hot wind. But he adds, that "all the recognised specimens belong to species which are found in every part of the world."

It is curious in the face of such facts as these that Dr. Hermann Weber, in his standard work on climate, should state:— "Whilst it (the Leste) lasts, the air is remarkably *free* from dust, and contains a considerable amount of ozone." Again, I have found the direct contrary with regard to the

presence of ozone; for it is at these times almost entirely absent according to my observations. The sky is unusually free from clouds, and the air remarkably dry; not unfrequently the relative humidity falls to from 30 to 35 per cent., and Dr. Grabham mentions one occasion in which it was only 22 per cent.

Thunderstorms are very uncommon in comparison with England and the continent of Europe.

During the whole year from June 1st, 1888, to June 1st, 1889, there were only two thunderstorms; on one occasion there was distant thunder, and on another there was some sheet lightning without any thunder. When thunderstorms do occur, it is generally with a South-West or West wind, especially on the breaking up of the summer drought by the first rains of autumn.

Ozone I have found exists to a fairly large amount, on the average to nearly 3, on a scale of 0-10, but the quantity during the night is usually greater than during the day, in the proportion of 3·3 to 2·4.

Dr. Tucker Wise gives the average

amount for the Engadine as 7·4 on a scale of 0 to 20. The largest proportion by far exists in the air during the humid westerly winds; less during the North-East winds; while it is almost entirely absent during a "Leste."

Though Madeira has been a well-known and popular winter resort for the last fifty years and more, yet, as I have intimated at the beginning of this chapter, for the last half of that period it has been declining in fame as a resort for consumptives, unless they are in an advanced stage of the disease; more especially has this been the case since the heroic treatment of phthisis by the Alpine winter cure came into fashion. From being perhaps over-rated as a health resort, it has become too much neglected for certain cases of phthisis, which presumably should do well there, as well as for other diseases, such as some forms of bronchitis with irritable cough, or when complicated with emphysema, which almost invariably do well in this climate.

The character of the climate being essentially sedative, it is very suitable for cases of laryngeal catarrh and chronic bronchial

catarrh, especially with a dry irritable mucous membrane. Cases of albuminuria and Bright's disease, where it is important to keep the skin active, and where chills and sudden checks to its action are injurious, do well, as these results are obtained to a remarkable degree by the equable climate. It is asserted, however, by some authorities that Bright's disease is peculiarly common amongst the natives.

As to the cases of phthisis in which the climate is likely to prove beneficial, those of an inflammatory nature with a tendency to bronchial or other intercurrent complications, except where there is a tendency to diarrhœa, are likely to do best; or those with poor circulations, who cannot stand a cold climate. Again, it is said to be wonderful how persons with advanced disease, but where it is not very active, are often able to lead a very comfortable, though of course quiet life in Madeira, whereas they could not exist at Davos, and scarcely so even in the Riviera. It is, however, doubtful how far it is right at any time to send advanced cases away from their

own people and their home surroundings. This climate does not seem to be nearly as effectual in checking cases of primary tubercular deposit, and in removing such consolidations, as the Alpine climate.

Pulmonary tubercular disease is comparatively seldom seen amongst the upper classes of the Portuguese; but amongst the poor in all districts it is not uncommon (Grabham). There is a remarkable mildness in all inflammatory diseases; but diarrhœa is often severe amongst the natives, and causes a great mortality amongst the children of the poor. Visitors also often suffer from it, especially if they are located in the town itself; but it does not seem as general or as severe as amongst the visitors to the Canaries. It may be avoided or rendered only slight and tractable, if it is taken in time, and if due precautions are taken till the visitor is acclimatised, in avoiding too much exposure to, and over-exertion in the sun, in being careful and moderate in the use of fruit, meat, and wine, and above all in guarding against the opposite condition during the voyage.

Typhoid fever is far from uncommon, but is not usually of a severe character, though occasionally it becomes virulent, both amongst the natives and visitors; and not unfrequently there are sad and unexpected deaths amongst the latter from it. But Funchal, unfortunately, is not singular amongst foreign, or indeed English, health resorts in these sad disasters, which are due either to bad drainage or to the contamination of the water supply, as I have before stated.

When typhoid occurs amongst the visitors in Funchal, it seems usually due to the very defective drainage of some of the villas, and every visitor who intends taking a Quinta for the winter, would be wise in obtaining some guarantee as to the condition of the drainage and water supply for flushing purposes, before making any agreement. If every one would take the trouble, in their own interest, thus to protect themselves, then pressure might be brought to bear upon the owners to put their houses in a sanitary condition. As it now is, even if one person, having made inquiries, refuses to take a certain house on account of its

insanitary condition, the next applicant is probably led into taking it, perhaps with disastrous results to his own family, and therefore increasing the bad reputation of the island in this respect. Again, even if the water used for drinking purposes is supposed to be pure, it should for safety be both boiled and filtered.

Funchal has, however, no mean advantages in other respects; firstly, in the good accommodation obtainable at moderate charges, whether in the hotels or in private villas, and the much more kindly attention received at the former by invalids, than in many places ostensibly known as health resorts, which should certainly be taken into consideration if patients have to leave the comforts of their own homes; secondly, in the good food obtainable; thirdly, in the entire absence of dust, and the very slight amount of smoke (and that chiefly wood smoke) ever present. This absence of dust is due to the roads all being paved, so that it is not formed as on macadamised roads. How different from Egypt or the Riviera in winter, or the

Engadine in the summer! Lastly, in its southern aspect, whereby it obtains so large a proportion of sunshine, which enables the invalid to be out so much more in the fresh air than in resorts with a northern aspect, or at Davos, where the average sunshine is only 113 hours per month during the winter, and where the patient can rarely be out more than four hours a day.

Two or three weeks often pass in Madeira without a wet day during the winter; and it is most rare to have a day without at least some sunshine. In fact, during the six months from November to April, 1889, there were only nine days on which there was less than one hour of sunshine. Thus it is quite rare to experience a day when an ordinary invalid is not able to get out for at least some part of the day. Again, Funchal is far better protected from the cold North and North-East winds than Las Palmas or Orotava, which face East and North respectively, and where the winds in winter are often felt too trying for invalids to sit out in.

Winter in Madeira is truly avoided, not merely mitigated as in the Riviera; and the

cold North and North-East winds of continental Europe are warmed by passing over a thousand miles of sea, itself warmed by the great Gulf Stream.

From the researches of the "Challenger" it was shown that the temperature of the sea around Madeira is 72° F., which is greatly above the mean temperature of the atmosphere, and decidedly warmer than at the Canary Islands, where it is only 69° F., though so much South of Madeira.

Till Madeira is reached, it is vain to look for an immunity from those cold winds of spring which are always so trying to the invalid and to the weakly.

No doubt Madeira cannot show such good statistics of recoveries from phthisis as the Alpine resorts; for admittedly all the strongest cases, and those with every advantage in their favour, to say nothing of the stage of the disease, are sent to Davos and St. Moritz; while Madeira is reserved chiefly for those of weaker physical constitution, or for those who have some unfortunate complication. Is it fair to compare the statistics of the two?

The summer in Madeira is remarkably cool for its latitude, which is 32° 43′, or much South of Tunis and Tripoli, and very much about the same latitude as Morocco or Alexandria. Yet it is rarely oppressive, and the thermometer does not often rise over 80°, even in the hottest month, except when a "Leste" is blowing, when the temperature may approach 90° for a day or two.

Many of the villas situated on the cliffs overlooking the sea on either side of the town are kept quite pleasantly cool throughout the summer by the fresh sea breezes, and thus even the heat of summer is not felt too trying, if it be thought advisable for the patient not to return to England. Unfortunately the higher stations in the island are mostly too damp, on account of their liability to be enshrouded in mists and clouds which so frequently gather on the mountains; so that even the favourite and pretty district of Camacha, at a height of 2200 feet, does not altogether escape, even in summer. Much more is this the case, however, with the district around the Mount Church, which is nearly 2000 feet

high, and where mists so constantly gather that the climate is quite unfitted for invalids. Neither Sanatorium again is of sufficient height in this latitude to give the benefit obtainable from the rarefied air of a true mountain climate; though after living in Funchal they are comparatively bracing.

The following table gives the rainfall, number of days on which rain fell, the number of days when there was less than one hour of sunshine, and the approximate number of hours of bright sunshine for the season of 1888-9. The season was an unusually dry and fine one, and though the sunshine given may be slightly above what a sun recorder would have registered, yet on subsequently comparing similar observations with the records of a Jordan's Sun Recorder, taken simultaneously, they seem fairly correct.

The natural tendency of such observations is to over-estimate the sunshine, but on clear days there is somewhat of an unavoidable discrepancy through the instrument not recording the first and last twenty minutes (or thereabouts) after the sun has risen, and

before it sets respectively, though it is shining full upon the instrument. The automatic recorder has only been used for the following table since September 15th, 1889.

The rainfall for 1889, from January to November, was only 9·45 inches, or including December, 1888, to complete the year, it has been only 12·15 inches.

Month.	Rainfall.	No. of Days on which Rain Fell	Hours of Sunshine.	Number of Days with less than 1 hour Sunshine.
1888.			Hrs. Min.	
August . .	·00	0	*	*
September .	·725	6	*	*
October . .	3·035	12	171	3
November .	1·80	11	190 30	0
December .	2·70	13	194 30	0
1889.				
January . .	·64	10	185 30	2
February . .	1·59	8	166	3
March . . .	1·78	7	204	3
April . . .	·54	5	176	1
May . . .	1·35	8	133 45	2
June . . .	·48	3	*	*
July . . .	·05	1	*	*
August . .	·09	1	*	*
September .	1·36	5	117 35†	0
October . .	1·06	8	162	0
November .	·51	5	178 30	1

* Not recorded.

† Recorded by a Jordan's Sun Recorder from Sept. 15th only.

CHAPTER V.

A Winter in the Canary Islands.

These islands have been but little known to the English in the past, although only two hundred and fifty miles South of Madeira; but they have lately come very prominently into notice, partly through the opening up of improved communication with the islands, and partly through the writings of Mrs. Stone, who was the first English person to thoroughly explore and describe the islands, and to acquaint the public with the results of her travels there, in her excellent work on "Teneriffe and its six Satellites."

The medical profession, as well as the general public, have since shown a great deal of interest in the islands, and large numbers of people have visited them during the last three years. Many inquiries are also being made as to what prospect these islands have of affording a desirable winter resort for those who require a warmer and

VILLA ORATAVA AND PEAK OF TENERIFFE.

more equable climate than the Riviera, and yet a drier one than that of Madeira.

There have already been several rather acrimonious disputes in various periodicals between the partisans of these Islands, and those who consider themselves victimised in being induced to pay the islands a visit, through what they consider the too glowing and too highly coloured descriptions of their scenery and climate, which have so much attracted public attention of late. Unfortunately instead of tending to settle the matters in dispute, these discussions generally terminate in personalities, those writing in favour of the islands being accused of being interested in the various new hotels springing up there, while those who see the drawbacks connected with them, and which undoubtedly exist, are at once judged to be looking at everything with the jaundiced eye of the chronic grumbler or dyspeptic!

Having spent seven months in the islands as an invalid, my experiences may not be devoid of interest to those who are inquiring as to their suitability for invalids.

The island of Teneriffe may be most

quickly reached and with the greatest comfort by the fine ocean steamers of either Messrs. Shaw, Savill, and Co., or of the New Zealand Shipping Company, both of which sail monthly from London, and call at Plymouth, from which port they take only from four-and-a-half to five days. The intermediate steamers of the Castle Line of Packets to the Cape call at Grand Canary once a fortnight. The British and African and the African Companies' ships sail weekly from Liverpool, calling both at Teneriffe and at Grand Canary, and take about nine days on the voyage. These are smaller, slower and cheaper boats than the above mentioned, and vary much in their accommodation, some being clean and good, while others are dirty and uncomfortable. As they are the only lines of English steamers going to our possessions on the West Coast of Africa they are also apt to be overcrowded at certain times of the year. A weekly steamer service having lately been established between the islands to replace the old schooners, communication between the islands is now greatly facilitated.

The landing place and port of Las Palmas and for the Island of Grand Canary, generally, is at Puerto de Luz, some four miles from the town of Las Palmas itself, as a promontory, called the Isleta, forms a more sheltered roadstead than the anchorage off Las Palmas. Even here the landing has to be effected in small boats, and is often made with difficulty on account of the heavy swell which generally prevails. The promontory is joined to the mainland by a narrow isthmus composed entirely of immense banks of sand. There is an excellent macadamised, but exceedingly bare, dusty and uninteresting road from Port de Luz to Las Palmas, and the supply of dust is always kept up most efficiently from the barren ground of the hills, and from the large banks of sand which line the road on either side!

The Canary Islands possess a great advantage over Madeira (and many other foreign resorts), in that they are all free ports, and one has not the aggravation of being charged by a set of voracious officials

a heavy duty on the cost of all articles sent out from England.

I landed at Las Palmas with several other invalids about the middle of October, but we all found the heat still very oppressive, and we felt it would be better for invalids not to arrive in the islands before the beginning of November, unless they go to the high station of Laguna in Teneriffe, which has elevation of 2000 feet.

Las Palmas, the capital of Grand Canary, faces nearly due East, and is built on a flat strip of land at the base of some barren hills, and lies between them and the sea. It has a very Eastern appearance, as most of the houses are built in the Moorish style, with flat roofs and a central court or square called the "Patio," which is open to the sky and is often prettily planted with flowers and shrubs, and sometimes has a fountain playing in the centre. The hotels at Las Palmas afford fairly good accommodation, though invalids have not hitherto been much considered, in fact have rather been thought "de trop." There are two English hotels besides the Spanish Fonda, but the great

complaint against them is that they are all essentially badly situated for invalids, being placed more or less in the streets of a particularly noisy, dirty and odorous town; neither is it possible within an easy walk, to get out of these narrow streets for the fresh and pure air and the gentle exercise which is so essential to the phthisical. Certainly there are two Plazas in the city, in the principal of which, the Alameda, the band plays two or three times a week; but they are both far too small to afford any fresh air or sense of freedom from the surrounding streets. All invalids used, therefore, to drive almost daily to the fine sandy beach about a mile and a half off—a quite unattainable distance on foot for invalids in the hot sun experienced there—and spend the morning on the shore. Often, however, as there was no shelter of any kind to be obtained, the more susceptible of the invalids found the strong and cool North-East trade wind, which blows so persistently, too much for them, and they had to return to the close atmosphere of the town and hotel rooms. This sandy beach affords the best bathing place I

have seen in either of the islands or in Madeira. The shore is shelving and the water is beautifully clear, and never too cold for those in health, though the swell is sometimes too heavy for ladies to bathe with safety. The temperature of the sea is never below 64° F. The "Challenger" reports give the temperature of the sea in the Canary Archipelago as 69° F.

As there are no villas to be obtained, as in Madeira or in the Riviera, everyone is obliged to take up their quarters in the town hotels. Until, therefore, there is accommodation with good sanitary arrangements provided away from the streets of the town, with gardens, sheltered balconies and such like conveniences for the delicate, so that they can obtain fresh air without constantly inhaling the foul odours of the streets of a drainless town, Las Palmas does not seem to fulfil the elementary requirements of a health resort. Indeed, from the amount of illness there during the season 1887-1888 amongst the visitors, especially diarrhœa, typhoid and "bilious" fevers, the first of which almost universally

attacks all new comers, whether healthy or delicate, whether they are indiscreet in their use of fruit or never touch it, it appears scarcely a satisfactory winter resort for anyone; and many and great have been the disappointments of those who have gone with the expectation of spending a pleasant winter, and of returning home in improved health.

A large and fine hotel and sanatorium is being built between the port and the town, which is to be opened for the season 1889-90, and though its position is vastly better than that of the other hotels, yet it is too near the high road in front, and the arid hills behind, and too exposed to the prevailing winds. It is no doubt in a convenient and good position for business people or for visitors in health, but before Grand Canary can be looked upon as a desirable health resort for invalids, a more satisfactory spot than the windy, dusty and populous town of Las Palmas, must be discovered and opened up.

That the climate of Las Palmas is a remarkably dry one there can be no doubt,

and this is more especially noticeable as it is an island and not a continental climate. During the six months from November 1888 to April 1889, only six inches of rain fell, and the relative humidity was only 65 per cent. This too is the rainy season of the year. The bright sunshine as registered by a Jordan's Sun Recorder for the same period, was as follows:— November 166 hours, December 129, January 137, February 167, March 193, April 140, or an average of five hours nine minutes per diem (Dr. J. Cleasby Taylor), against an average of only four hours seven minutes at Orotava, and six hours six minutes at Funchal (approximate). The above season was, however, an exceptionally fine and sunny one at the latter place.

The climate at Las Palmas may, therefore, be looked upon as a drier and more stimulating one than that of either Orotava or Funchal.

Leaving Grand Canary at the end of November, I spent the remainder of the winter in the Island of Teneriffe. The steamers take about six hours, or frequently

a night, in going from Las Palmas to Santa Cruz, the chief town and port of Teneriffe, and the capital of the Archipelago. There are two fair hotels at Santa Cruz, but they labour under the same disadvantages as those of Las Palmas, and few persons stay there more than a day or two, as they hurry on to the more attractive places, Laguna and Orotava. I hear, however, an English boarding house, has been opened this season, a short distance away from the town. Though at present neglected, it seems probable that for the months of January, February and March, Santa Cruz, of all the places at present available for visitors, has the best climate in the islands; for as it has a southern aspect, the clouds which so constantly gather in these islands and form a perfectly thick, impenetrable canopy over the whole zenith, do not intercept so much of the sunshine as in those places, such as Orotava, which are situated on the North side. Again, it is more protected from the cool North-East winds to which the latter places are exposed, which are grateful enough later on in the

spring, but which are rather trying to many invalids during the earlier months of the year. No doubt, eventually, localities at higher elevations, with a more bracing air and yet above the "lie" of the clouds, will be opened up. Villa Flor on the south side of the island, at a height of 4500 feet, is said to be such a locality; but at present there is no accommodation there whatever. The clouds as a rule occupy an elevated band of from 2500 feet to 3500 or 4000 feet, and one may occasionally catch a pretty glimpse through the heavy mass of clouds, of the bright sunshine on the more elevated mountains, or on the peak itself. These clouds come down so low occasionally as to make living at the Villa Orotava very depressing. From Santa Cruz to Orotava is a long six or seven hours' drive, the road passing through Laguna, above referred to, at a height of nearly 2000 feet. The road commences to rise almost immediately after leaving Santa Cruz, ascending in long and continuous curves, almost the whole way to Laguna. The road is excellently made, but is utterly bare and uninteresting except for

the views of Santa Cruz lying spread out below with the blue ocean beyond. When once the precincts of Laguna are reached, the road changes in character, and one has to drive through the town over the most villainously paved road I have ever seen. The only comparison I can make, to give an adequate idea of it, is to compare it with the log-mended roads of the backwoods of America, or with the up country stations of New Zealand, where one has sometimes to hold on to the seat lest one should be thrown out of the vehicle, or be bumped to pieces, as the charioteer cracks his whip over his team, and dashes along regardless of holes and any impediments of that nature. Laguna was the ancient capital of the island, and now possesses a good English hotel. It is a pleasant and favourite place to live in during the summer and autumn months, and indeed, no great heat is experienced throughout the entire summer; so that it forms a very convenient resort for those invalids who cannot or dare not return to England during that season. Many of the residents in Orotava and Santa

Cruz go there with their families in May and remain till October or November, during which period Dr. Victor Perez, of Orotava, informs me the weather is most pleasant. It is, indeed, probably the best of all the higher summer stations, hitherto available for invalids either in the Canary Islands or Madeira, and some seem to have obtained benefit from a stay there. It seems quite unfit, however, for invalids during the winter and spring, on account of its dampness—it occupies the site of an ancient lake—and the frequency with which it is visited by cold mists and chilly damp winds. Mists come down and envelop Laguna on an average of forty-four days during the year. The mean temperature according to observations taken there by Dr. Perez in 1882, is 63° F., or about six degrees colder than the Puerto Orotava. February is the coldest month, with a mean of 54.8° F.; and August the hottest, with a mean of 72·2° F. Many delicate persons find the long drive from Santa Cruz to Puerto Orotava very trying, not only from its tediousness and the shaking that has

to be endured in passing through Laguna, but also on account of the chilly winds and mists or rain frequently experienced during the winter months at that elevation, and which form a great contrast to the weather left behind an hour or two before at Santa Cruz. It is very injudicious, therefore, for persons to throw aside their wraps and put on light under-clothing, as they are so apt to do on arriving at Santa Cruz; for many cases of serious chill and illness have thus been caused amongst visitors coming to Orotava.

I found that the Grand Hotel at Orotava, which has been so highly praised, and in some respects over-praised I am afraid, could only entertain about five and twenty guests; so on arriving I found, like the vast majority of visitors, I was placed in one of the more or less unhygienic dependencies,* situated in the centre of the town,

* But as the dry-earth system has been adopted in the hotels, a great source of danger in imperfect drains is avoided, and Orotava has so far been entirely free from typhoid fever, which is no slight recommendation.

and devoid of gardens, &c., which make so much difference in the value and pleasantness of a place for invalids. One soon found, however, that Orotava had many advantages over Las Palmas, even in its present condition; and not only so, but that its possibilities also were much greater. To begin with, the town is far smaller, and within a very few minutes' walk of any part, there is a fine sea beach bounded by a nice level road, which could easily be made into a good promenade. Again, though the town is placed on a low peninsula of land and but little raised above the sea level, the ground rises very rapidly, almost precipitately at the back of the town, to a sloping plateau, with an elevation of about 350 feet, thus affording splendid sites for the future building of villas. There the new Hotel Company have already commenced to build a fine hotel, which, it is hoped, will obviate many of the disadvantages of position, arrangement and management so much complained of by many visitors, hitherto, at the hotels in the town.

There are two places called Orotava:

one, the Puerto or port by the sea, is more especially the new health resort; while the other, the Villa, is situated nearly three miles away, at an elevation of 1200 feet, and was anciently far the more aristocratic and important place of the two. The latter cannot be recommended as a residence for invalids, as it is situated on a very steep slope, so that there is not a level walk in the place; and it is rendered very damp and depressing by the lowness of the clouds which often descend the mountain side above the town, to within a few hundred feet. For a month or more during my stay there, I scarcely had a glimpse of sun, on account of the constant heavy and dense canopy of clouds overhead, not by any means the "parasol of fleecy clouds," as it is sometimes described! The sun would sometimes shine from six to seven o'clock in the morning, when it first rose over the mountains to the east of the valley, then the clouds would settle down, and nothing more would be seen of it for the rest of the day; and this was in the months of April and May. Such a damp and depressing

climate is not good for an invalid. It is, however, much freer from cloud during the autumn months. This heavy canopy of clouds is not felt so depressing at Puerto Orotava, as it is not so close under the mountains; still, a great deal of sunshine is intercepted, so that during the season 1888-1889, for instance, Mr. Boreham, who kindly supplied me with the results of his observations, found there were only 114¼ hours of bright sunshine in November, 100 in December, 107 in January, 147¾ in February, 149 in March, and 128 in April, as registered by a Jordan's Sun Recorder.

Of the Puerto, Mrs. Stone writes, "It would not be doing Orotava justice to say that it will shortly be a second Funchal; for it can easily rival, and most certainly surpass, Madeira as a winter residence for invalids; besides having attractions that will induce the healthy to resort thither, and prevent it from ever becoming the melancholy hospital that Funchal is."

It is such vague and indefinite comparisons as the above, made in favour of a place well-known and liked by the writer, which so

frequently give wrong impressions of places to the public. With the single exception as regards the climate, that there is a greater rainfall on an average at Funchal than at Orotava, everything, it seems to me, is in favour of the former, as regards the class of invalids which ought to be sent to these climates. Again, I quite fail to see what attractions Orotava has for the healthy which Funchal has not, saving for the presence of the Peak itself, but very few, even of the healthy, ever ascend it; and, furthermore, not only are the excursions to be made from Funchal far more numerous, but the scenery is undeniably far finer. It is not given to every one to be a pioneer like Mrs. Stone, nor to despise the comforts of the hotels and conveyances, or the kind attentions of the hotel proprietors to the wants and requirements of their guests, whether well or ill, as she appears to do.

Though Orotava is situated on the north side of the island it does not experience the cool North-East trade winds in such force, during the winter months, as Las Palmas; for the Island of Teneriffe is not then so

directly in the track of these winds as that of Grand Canary; though it has the advantage of experiencing them during the summer, when they exercise a grateful and cooling influence on the climate.

In consequence of the heavy swell which usually prevails on this Northern Coast of the island the spray rises in a thick mist, which can be seen extending all along the coast to a distance of several hundred yards inland and to a height of a hundred feet or more. This salt-laden air must be constantly inhaled by invalids living near the sea, and many cases may reap considerable benefit from it, as such air is considered by some peculiarly good for certain types of phthisis.

Vegetation is decidedly more prolific than around Las Palmas, a very barren place, though it does not equal in luxuriance that of Funchal; but there is sufficient to render the country green and pleasant to the eye, and most of the land in the valley of Orotava is well cultivated, and the ground is let at high rents for agricultural purposes. Three and even four crops are obtained off

the same ground during the year for which irrigation has to be constantly employed.

Notwithstanding the amount of vegetation, garden vegetables are difficult to procure, as also are cow's milk and butter. The latter is not made for sale, as it was an almost unknown product till the last two years, it consequently has to be imported and is generally quite uneatable. Sometimes we used to order it to be removed from the table before we could sit down to a meal! A public market would be a great boon, as it would cause competition, and improve the supply and quality of various articles of food.

There is one good spring for the supply of drinking water, but it is situated a mile from the town, and yet all potable water has to be brought from it. Care should therefore be taken to ensure its coming from the right source, and also that the small barrels in which it is usually brought are kept clean and left open to the air after being emptied. If the bung is replaced they become musty and render the water next time they are used, almost undrinkable

from its mouldy flavour, as was frequently the case when I was there. It is cleaner and more satisfactory, therefore, to use earthenware jars for fetching and keeping the water, such as are used in Grand Canary and Madeira.

Mosquitoes are declared to be entirely absent at Orotava, but visitors did not find this to be the case. They were about as numerous as at Funchal, where it is also often stated they are absent. They are, however, far less numerous than in Las Palmas, where they simply swarm.

There are two good drives from Orotava, viz., that towards Laguna, and that in the opposite direction to a village called Icod, where the good driving road ceases. Many think that the possession of these two excellent roads gives Orotava a great pull over Funchal, where there are no wheeled vehicles whatever. Orotava has also borrowed the hammock and the bullock carro as means of locomotion from Madeira, but in consequence of there being so few of either at present, it is hard to get hold of them when wanted.

The mortality from phthisis is small, though the natives are by no means exempt, the death-rate per 1000 at Orotava for the following years was as follows :—in 1875, 0·94 ; 1876, 0·47 ; 1877, 1·0 ; 1878, 1·62 ; and in 1879, 1·41.

The average mortality from phthisis is given as 1·5 per 1000 in Puerto Orotava, 1 per 1000 in the Villa Orotava, ·65 in Laguna, and 3 in Santa Cruz. The general death-rate varies from about 14 to 22 per 1000.

As far as one can reconcile the varying figures of various observers (Honeggar, Belcastel, Biermann), the annual mean temperature of Orotava seems to be about 69° F., or about three degrees warmer than Funchal.

The mean temperature for the four seasons is as follows :—Winter (December, January, February), 63·3 ; Spring (March, April, May), 66·7 ; Summer (June, July, August), 74·9 ; Autumn (September, October, November), 71·8. The winter temperature is thus 2·4° F. warmer than that of Funchal which is 60·9° F.

The mean annual rainfall is given by Honneggar as 13·4 inches, falling on 52 days.

June, July, August and September are practically rainless months, while February is the wettest month, an average of 2·56 inches falling on six days. Snow rarely falls below 2500 feet, and is not often seen except on the mighty El Teide (the Peak), till January or later, but I have seen it low down on the mountains to about that level even in April. The ground being entirely composed of volcanic scoriæ and rock is very porous and quickly dries after even the heaviest rains.

The relative humidity has been given by Dr. Biermann as 67·4 (for the months of January, February, March, April and May) as the mean of three readings at 7 a.m., 2 p.m., and 9 p.m., which does not show any marked degree of greater dryness over Funchal. Mr. Boreham's careful observations during the season of 1888 to 1889, show a decidedly higher degree of (relative) humidity, viz., 77°, from observations taken at 9 a.m., 3 p.m., and 9 p.m. That such a

winter as 1888 to 1889 with a great persistence of cloudy weather and Northerly wind should show such a result does not seem so surprising as might at first sight appear. This is not a dry wind by any means, and in the case of Orotava it blows directly off the sea over the valley; but in Madeira it has to pass over the intervening high range of mountains before it reaches Funchal, whereby it loses much of its moisture, and it then descends on the south side of the island as a comparatively dry wind.

The clouds, as in Madeira, are a prominent feature of the climate, and very specially so of Orotava, for they constantly form a dense canopy overhead from the condensation of the moisture in the trade winds as they become cooled in rising over the high barrier of mountains to the south of Orotava. From the northern aspect of this place the clouds naturally intercept far more sunshine than they would do with a southern aspect, such as Funchal, where during the whole of the season of 1888-1889 (November to April) there were only nine days with less than an hour's sunshine.

The North-East wind is the prevailing one, and is chiefly felt at the sea-level. The sea and land breezes are also plainly felt, the former being reinforced and joined with the trade wind when that is blowing. A very hot, dry and parching wind called here the Levante, exactly corresponding to the "Leste" of Madeira, occasionally blows over the islands from the South or South-East, but as its nature and source were described in the last chapter, I shall not again enter into particulars about it.

My meteorological observations taken at Puerto Orotava, for the season of 1887 to 1888 are given in Table I., by which it will be seen that 50° F. was the lowest temperature recorded; and that the mean temperature of the five winter months to March was 62·8°, which is almost identical with the mean summer temperature of London, *i.e.*, 62·3° F.

It will be gathered from the observations given in Table II., that the season of 1888 to 1889 at Orotava was particularly cool, sunless and damp in comparison with the records of previous years. The mean tem-

perature of the three winter months was only 58·7, instead of 63·3. The number

Table I.

Record of Temperature taken at Puerto Orotava during the winter of 1887-8.

	Nov.	Dec.	Jan.	Feb.	March.
Mean of month.	65·7	64·6	62·2	60·4	61·5
Mean maximum	71·6	70·2	67·8	66·5	67·5
Mean minimum.	59·8	59·	57·6	54·4	55·6
Mean range	11·8	11·2	10·2	12·1	11·9
Highest maximum. . . .	77·	82·†	74·5	73·	76·†
Lowest minimum	53·	56·	50·	50·	53·
Approximate sunshine, hours‡		180	179½	163	234

Thermometers with full northern exposure. No screen used, which probably renders the results rather lower than if a Stevenson's screen had been used.

of rainy days was nine more than at Funchal, and the rainfall nearly an inch greater in amount, while the relative humidity was also considerable higher.

It may be seen, therefore, that the

* The observations for November were taken by a friend.

† Hot South-East wind or Levante.

‡ The sunshine was taken by observation only. It probably does not give at the outside an excess of more than 10 per cent. of bright sunshine.

TABLE II.

Meteorological Observations taken at San Antonio, Orotava, November 1888 *to April* 1889, *by* W. L. BOREHAM, ESQ.

346 FEET ABOVE THE SEA.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.	MARCH.	APRIL.
Mean temperature of month . .	64·5	60·5	57·8	58·4	59·3	59·9
Mean maximum	69·8	65·6	62·7	64·2	64·5	64·2
Mean minimum	59·3	55·4	53·	52·7	54·1	55·7
Highest maximum	73·8	69·4	66·5	75·5	69·2	66·5
Lowest minimum	54·9	51·8	51·	50·	49·1	49·6
Maximum in sun	152·8	142·9	154·8	149·3		
Minimum on grass	51·	49·4	47·5	39·9	40·3	41·6
Sunshine, hours*	114·15	99·55	107·5	147·40	148·55	127·55
Total rainfall	·513	3·994	2·203	1·430	1·174	·632
Number of days on which ·01 or more rain fell	8	17	13	10	7	8
Relative Humidity. 9 a.m.	73	85	75	71	75	73
Relative Humidity. 3 p.m.	72	82	73	71	75	70
Relative Humidity. 9 p.m.	80	88	82	80	80	80
Barometer, mean 9 a.m. and 9 p.m.	30·205	30·194	30·265	30·242	30·187	30·253
Barometer, highest	30·39	30·47	30·57	30·55	30·36	30·40
Barometer, lowest	30·09	29·72	29·97	29·55	29·87	30·05

* Hours of bright sunshine recorded by a Jordan's Sun Recorder.

balance of fine weather is not *always* in favour of Orotava over Funchal, though as a rule Orotava seems to have a drier and slightly warmer climate than Funchal, and one of much the same equability.*

The climate seems fitted for very much the same class of cases as that of Madeira, though of course being a new place it is thought by its more enthusiastic partisans that its climate will prove a panacea for almost every complaint. So one finds cases of almost every kind there, neuralgia and sciatica, gout and rheumatism, nervous shock, Bright's disease, African fever, laryngitis, asthma, phthisis in all stages and in all constitutions, cases one would have thought just fitted for the climate of Davos, as well as cases so far gone that they should never have left their homes at all; all expecting to find there what they will find nowhere—a perfect climate.

* Season, 1888-1889.

	Rainfall.	Days of Rain.
Orotava	9.946 inches ...	63
Funchal	9·05 inches ...	54
Difference in favour of Funchal	·896 inches ...	9

It will be seen that I have not written any fanciful or poetical descriptions of these islands such as are so often written; but I have given the facts concerning them, at all events as they appear to me and to the majority of visitors with whom I came into contact while there and since. I have not unfrequently heard visitors to the Canary Islands say that it takes the first fortnight to unlearn all they have previously heard or read about them, and to disabuse their minds of the exaggerated descriptions of weather and scenery which have been circulated! No one, however, can deny that the islands do possess a great deal of beautiful and grand scenery, and a really good though not perfect climate. Teneriffe especially, has great capabilities as a health resort in its dry and yet equable climate, though it still labours under many disadvantages through its lack of development; these, however, are mostly removable by time, by good management, and by the opening up of a more sheltered, and if possible more elevated resort than Puerto Orotava, on the south side of the island to the west of Santa Cruz.

MENTONE, LOOKING EAST.

CHAPTER VI.

The Western Riviera.

This most delightful and popular district possesses not only the most lovely stretch of coast and sea scenery in Europe, but also the most delightful winter climate that can be reached with facility by the inhabitants of Great Britain.

The whole coast line from Hyères to Genoa is now roughly included under the title, and it is studded throughout its entire length with most picturesquely situated villages and towns, many of which are most popular winter health resorts, and great is the rivalry amongst them. In this capacity, namely as Winter Health Resorts, there has been a vast amount of discussion as to their rival merits, and indeed some may think a vast deal of hair-splitting as to whether this place or that is the more exposed to the cold winds, whether this place or that is not half a degree the warmer.

Again, each place is divided for further discussion into a West side and an East side, a situation near the sea and others more inland, till the minute differences may appear bewildering and unnecessary. There is, however, more excuse than at first sight is apparent for this vast amount of subdivision; for it is not unfrequently found that an invalid of excitable temperament, who cannot sleep or who shows intolerance of the climate in other ways, when residing in the confined space, for example, of the East Bay of Mentone, yet by a move even to the West Bay, or to San Remo, is rendered far more comfortable.

Though the whole of the Riviera possesses a somewhat uncertain climate in comparison with some which are well within the reach of invalids, and has consequently had many detractors of late years, yet if it is looked upon in its proper sphere, and is not expected to be what it is *not*, *i.e.*, a warm and equable climate, it is then found to be, for many complaints, an extremely valuable and useful climate. It forms a fair medium between the extremes of the Alpine

Winter Resorts on the one hand, and of Madeira and the Canary Islands on the other. It is as absurd to look upon the climate, as is often done by the advocates of the Alpine cure, as being a hot and relaxing one, as to go to the other extreme and declare it to be a district of such cold and trying winds that an invalid can rarely venture out with safety. The fact is, it is a fine and moderately dry climate, with a large proportion of bright sunshine and blue sky. This bright weather and hot sunshine is, however, often marred and rendered treacherous by the cold winds so often experienced there; especially is this the case when the Mistral blows, which is a bitterly cold North or North-Westerly wind, really rendering it unsafe for invalids to go out, notwithstanding that the sun may be shining brightly. It is of an intensely cold searching character, and on account of its dryness and strength, it raises clouds of dust from the dry roads. The contrast between hot sunshine and chilly shade is a risk always to be remembered, and has constantly to be insisted upon. Nevertheless,

the contrast is small when compared with that experienced at Davos, where the temperature of the sun's rays is frequently higher than that in the Riviera, while the shade temperature would not unfrequently be 30° to 40° F. lower, though usually the atmosphere would be stiller.

Notwithstanding these drawbacks, a winter residence in almost any of the well known resorts along the Riviera must always prove a most valuable change for a very large class of our invalids; not only on account of the accessibility, general attractiveness and natural beauty of the district, and avoiding as it does any prolonged sea passage, but also on account of the intrinsic merits of the climate; its stimulating and invigorating properties, the bright sun and large proportion of fine dry days that may be counted upon, and the general geniality of the climate after that of our northern shores.

This geniality of climate is caused mainly by four factors:—

Firstly, by the protection caused by the high Maritime Alps to the north.

Secondly, by the southern aspect of the various resorts; thus they obtain all the sunshine possible.

Thirdly, by the immediate propinquity of the Mediterranean, the water of which is several degrees warmer than that of the Atlantic.

Fourthly, by the radiation and reflection of heat from the limestone mountains, which is especially noticeable at Mentone.

Though the Riviera is so well protected and so favourably placed, it is well known as a very windy district, and these winds are frequently, whether from the North-West (Mistral), or the North-East and East, very cold during the months of February, March and April. It is said that the North-East wind is tempered there in comparison with its northern congeners by the more southern latitude (Sparks), and it no doubt is so to some extent, but certainly this does not apply to the bitter "Mistral."

There is, indeed, no locality on the continent of Europe which is free from the cold winds of spring, even places on the southern coast of Spain do not escape. Meran in the

Austrian Tyrol is said to be protected from them, but, as I have before mentioned, I have experienced very high and boisterous, as well as very cold snow-bringing winds there even in April and May. One must travel indeed to the islands of the West, to the Canaries or Madeira, before the East wind loses its terrors for the invalid, and even there the Northerly winds are often felt chilly.

The climate is not so noticeable for the small total amount of rain as for the small number of days on which rain falls, and for the large proportion of bright and sunny days. The rainfall may be estimated as varying from 28 to 32 inches, falling on from 60 to 70 days. The actual rainfall is therefore, about double that of Orotava, and almost identical with that of Madeira; while the number of days on which rain falls is about one-third more than in the Canaries (47), but slightly less than the average given for Madeira, which is 78. The relative humidity may be taken to be about 73 per cent. (Cannes 73 per cent., Mentone 72·8 per cent.).

The mean annual temperature of the Riviera may be taken, as about 60-61° F. (Cannes 60°, Mentone 61° F.), or about 5 degrees colder than Madeira (65·7°); while the winter temperature may be taken as about 51° F. (Cannes 50·4°, Mentone 51·5° F.) or about ten degrees colder than the Madeira winter (61·7°).

Snowstorms not unfrequently occur, and though the snow rarely lies for long on the ground, it has been known to remain for several days at Cannes. Sharp frosts are by no means uncommon, and ice on the pools is not a rare sight.

The accommodation in the Riviera is of course excellent, but considering the high prices charged by the hotel keepers, and how much they live by the presence of invalids, one would have thought that they would have endeavoured a little more to meet their wants, and to pay them a little more attention than they do. But this seems far from their principle, which is to make the invalid pay as much as possible for every little extra, which he has indeed the greatest trouble in obtaining. For in-

stance, if an invalid is living *en pension*, and from indisposition is unable to partake of the general meal, yet a glass of milk, or a little beef tea is charged for extra. A lady was ordered some chicken broth one day, at a well known hotel by her doctor, and lo! and behold, she was charged *twelve* francs for it! Compare this inattentive and grasping spirit with the hotels of Madeira. There, the proprietor or manager comes and asks if anything extra is wanted—a cup of beef tea for lunch, or a glass of milk on going to bed and so forth, and if desired it is supplied regularly, and without any extra payment. In most places pensions may be found, which are generally cheaper than the hotels, but it is very difficult for strangers to hear of satisfactory ones where they are likely to be comfortable. Indeed, many things tend to make living expensive in the Riviera, so that it is a mistake for invalids to go there, if in consequence of straightened means, they have to take north or inferior rooms; to feel the constant irritation of having to pay for extras beyond what they had expected; and

have to forego any constant and adequate medical supervision on account of the fees charged, no arrangement as at Davos ever being made as far as I have heard. But when an invalid arrives in the Riviera, it is most important, for more reasons than one, that he should consult one of the resident English physicians;—firstly, that he should be guided as to the best situation for his particular case, as far as can at first be ascertained, before finally settling on any hotel or Villa;—and, secondly, that the physician may be acquainted with the exact condition of the patient, in order that he may more readily judge of any new phase of the case, if his further aid be necessary during the course of the patient's stay.

Two important questions are not unfrequently asked—"When should an invalid return home, and which are the best places to stay at on the way?" This latter question will greatly depend as to when he leaves his winter quarters, and whether he travels homewards by the French route, or whether he proceeds viâ Genoa and the Italian Lakes. Invalids are, in the first

place, far more likely to err on the side of starting homewards too early, rather than too late, in the season. Those who set off on the first approach of warm weather, perhaps at the end of March or beginning of April, only too frequently repent their haste; for all travelling is at that time of the year a hazardous proceeding for invalids throughout Central Europe. The treacherousness and changeability of our English climate in the spring months, is especially felt after a long sojourn in the warmer and less changeable climate of the South of Europe. The end of May or beginning of June is, indeed, quite as early as those who have any decided delicacy of the chest, should venture upon encountering the vicissitudes of the English climate. The month of May will be felt by the majority of invalids too hot in the Riviera; for there is no doubt that as a rule, and putting aside individual cases, phthisical patients bear cold better than heat; the former braces them up, and invigorates their flagging energies, while the latter, in many cases, causes lassitude and depression. From the

middle to the end of April may, therefore, be considered as the most appropriate time for leaving the coast towns of the Riviera. This brings us to the second question, "Where is the best place to spend the intervening month of May?" If the Eastern route viâ Genoa be taken, the Italian Lakes afford many sheltered, lovely and suitable stopping places, such as Pallanza, Varese, Cadenabbia, etc. Varese may be particularly recommended; for the hotel, an old Ducal Palace, is situated on rising ground away from the immediate proximity of the lake, and also out of the town, while it possesses beautiful and extensive grounds of its own. There are also numerous walks and drives in the neighbourhood, and many delightful excursions can be made. Invalids staying in the above hotel are well understood, and receive every attention. The district affords wonderful scope for the botanist. Monte Generoso, near the Lake of Como, which has an elevation of about 5000 feet, near the top of which is a good hotel, is often visited, but as it is very subject to be enveloped in clouds till the season is well advanced, it

should not be visited in May by invalids. Lucerne is another very good stopping place for the month of May on the homeward journey; or if it be determined to spend the summer in Switzerland, it is a good starting point for the Engadine or elsewhere.

If the route through France be chosen, Grasse so little removed from the direct route, and hereafter described, would probably afford as good a resort for April and May as need be looked for; and few would find it too hot even towards the end of the latter month. Again, by branching off the main route at Lyons, the whole district round the Lake of Geneva is easily reached, with its many available places for a stay, such as Montreux, Vevez, Glyon, etc. Bex is also a favourite spring station, being well sheltered from the Northerly winds, and it is said to be decidedly drier than Montreux.

Mosquitoes are a great plague to most new comers, up till about Christmas time, when they mostly disappear till April or May. All the beds are, however, provided with mosquito curtains, so that with care one's

rest at night need not be disturbed. As to all the so-called preventions against their bites, such as sponging over with a solution of carbolic acid, etc., I cannot say I have found any of them effectual.

Phthisis is the chief disease for which amelioration is sought in this climate, and the results obtained compare very favourably with those at other health resorts. Thus Dr. C. T. Williams gives the following results obtained in the Riviera:—62·5 cent. improved or were cured; 20·39 per per cent. remained the same; 17·11 per cent. became worse; but Dr. Hermann Weber's results are hardly as good, viz:—47·6 per cent. improved; 17·5 per cent. remained the same; 34·9 per cent. became worse; and he adds, "nowhere else have we met with the occurrence of so many acute and subacute affections as among our patients in this region—the chief cause being bronchitis, pneumonia, pleurisy, laryngitis, etc." This is due no doubt to the cold winds, and the contrast between the hot sun and chilly shade, and should be a warning to all invalids to be careful to carry an extra

wrap for the cold, sunless and narrow streets of the "old towns" and other chilly or exposed places. Sufferers from chronic bronchitis, especially in those of advancing years, to whom the fogs and damp cold of our English winter are so fatal, form another large contingent of the annual visitors to this region. Dr. Henry Bennet calls it "an invaluable climate for weak, sickly and strumous children." Cases of gout, renal disease, rheumatism and dyspepsia, generally benefit by a residence in the Riviera.

Hyères.

In travelling from West to East along the coast of Provence, the first of these well known resorts which is reached after leaving Marseilles, is Hyères, though it can scarcely be strictly called one of the towns of the Riviera.

It is a quieter, smaller and less fashionable place than most of them, and situated about three miles inland instead of immediately on the coast. Furthermore, it is pro-

tected from the sea breezes by the pine covered ridge of hills (La Colline de L'Ermitage), and by the Islands of Hyères. It is also well protected on the north, but on the other hand, it is extremely exposed to the Mistral; and it is acknowledged by nearly all authorities that it suffers more from this cruel wind than any other resort in the Riviera.

About two miles south-west of the town of Hyères lies the picturesque valley of Costabelle, which, with its two large hotels, English church and several villas, forms quite a little colony of its own. Situated on the south side of the pine covered ridge of the L'Ermitage, above mentioned, these hotels are decidedly warmer, and far better protected from the dreaded Mistral than those in Hyères itself. They are also quieter and more pleasant to stay at, for those who prefer to be out of the noise and dust of the town.

The chief characteristic of Hyères is its distance from the sea, and therefore it is less exposed to sea influence. Consequently the climate is less exciting than some of the

other resorts, and more suitable for those who cannot stand immediate proximity to the sea.

Cannes.

Proceeding eastwards, the next resort of importance met with is the beautiful and fashionable town of Cannes, which is especially popular with the English.

It is a comparatively scattered town, and as there are many villas having private gardens attached to them, it covers a large space of ground; while the mountains do not closely encircle it as at Mentone, so that there is no feeling of confinement, as is sometimes felt by visitors in the latter place. This very openness, however, renders it more subject to be swept by winds, which are very prevalent, and especially by the Mistral. On an average there are seven days per month of strong winds or gales throughout the winter, so it must be put down as a very windy place.

Cannes is situated on the shores of two bays, an East and a West bay, which are

divided by a high ridge of ground, the Mont Chevalier, on which stands a conspicuous old tower. The chief business part of the town, as well as the harbour, lie to the east of this ridge; while many of the larger villas stand on more elevated ground to the west. A fine broad promenade runs along the whole length of the East bay, called the Boulevard de la Croisette; but the pleasure of walking or driving along it is greatly marred by the atrocious smells from the drains, which empty themselves into the sea along its course, and which are not carried out far enough into deep water to obviate this nuisance. This Boulevard terminates at the Cape de la Croisette, exactly opposite which, and at a distance of a mile, and one and a half miles, respectively, are situated the picturesque islands of St. Marguerite and St. Honorat. These islands are well worth visiting for the splendid view of Cannes and the Esterel mountains to be obtained from them; as well as for the interest attaching to the fort on the former island, and to the old Monastery on the latter.

The drives around Cannes are very

numerous, and are a decided attraction; the aspect of the country allowing of many more than is the case at Mentone or San Remo. The large amount of dust on some of the roads is a decided drawback, especially to those invalids who find dust irritating to their lungs.

Many kinds of sweet scented flowers are grown in large quantities in the neighbourhood for the manufacture of various scents, this industry being carried on very extensively there and at Grasse. It is said that during the month of May 100,000 lb of rose petals, 40,000 lb of orange flowers, etc., are used daily in the various distilleries.

The hotel accommodation is very extensive, for there are at least eighty large hotels in various positions, so that there is afforded a large choice of situation; not to mention the several hundred villas which are to be let furnished for the season, but at very high prices.

The water supply is considered very good, but as it is brought in a small open canal for thirty miles, it must run a considerable

risk of contamination, and should be efficiently filtered before delivery.

It is to be hoped after the energetic and public-spirited protest made recently by a well known Englishman, against the bad sanitary arrangements of some of the hotels, and the ready way some of the proprietors have responded, in adopting the recommendations of the sanitary engineers, that less will be heard in the future of typhoid fever, etc. It is a great pity that similar action cannot be insisted upon in many other health resorts.

Cannes has for the six winter months (Nov. to April) a mean temperature of 50·4° F., a mean maximum of 56·9° F., and a mean minimum of 44° F.; an average rainfall of 21·80 inches, falling on 58 days; and a relative humidity of 73 per cent. Snow occasionally falls, but it seldom lies on the level for more than a few hours.

The air is decidedly tonic and bracing, and consequently scrofulous and anæmic cases do well; while some persons with nervous constitutions, or those with a tendency to fever find the air too exciting.

Of places in the neighbourhood, Le Cannet situated on rising ground two and a half miles to the north of Cannes, is decidedly more sheltered from both land and sea winds than the latter, and thus presents some advantages to invalids over Cannes itself.

Grasse

Is situated at an elevation of 1000 feet above the sea, and about nine miles from Cannes, inland. It is much liked by some people, and presents some advantages over the coast towns of the Riviera for certain cases, while it is of course decidedly cooler. Invalids can therefore stay there with advantage later than in the towns along the coast.

Dr. Yeo says that in 1887 snow fell on six days, the minimum temperature fell to 26·6° F., and the mean minimum for the three winter months (Dec., Jan. and Feb.) was 35·7° F.

The hotel accommodation at the Grand hotel is now excellent, and the sanitary arrangements have been carefully attended to.

Nice.

This large and fashionable winter resort of the French possesses many artificial advantages; but, at the same time, it also possesses most of the drawbacks of the Riviera for the invalid, in a concentrated degree.

In the first place, being a large and fashionable town, pleasure and gaiety are considered before health; secondly, it is greatly exposed to cold winds, which are frequently high and strong; and thirdly, it is extremely dusty. It, however, possesses a dry, sunny and bracing climate, and is found to be very invigorating for those classes of invalids, such as dyspeptics, and those who are suffering from anæmia and general debility, who are not affected by the foregoing drawbacks.

During the winter season, from Oct. 1st to May 31st, there are on an average, 135·8 sunny days, 53·3 cloudy, and 52·8 rainy. The mean winter temperature is 50·9; almost identical with that of Cannes.

The magnificent "Promenade des Anglais," said to be one of the finest in Europe, and a mile and a half long, affords a splendid open and level walk for invalids, though it is frequently found to be very windy. This promenade was so named, because it was constructed at the expense of the British residents at Nice, about sixty years ago, to give employment to the poor.

Cimiez, a suburb two miles to the north of Nice, is situated on elevated ground, and is said by some to be more protected from the cold winds than Nice. But Dr. Sparks doubts this, and declares, "The chief advantage of Cimiez is its distance from the sea, and from the whirl and dust of a great and fashionable town."

Monte Carlo.

This lovely spot, one of the prettiest on the whole line of coast, has advantages for the invalid in its very protected position, and it is said to possess an even warmer climate than Mentone; but it is rendered unpleasant to many by the class of people

drawn there by the too well known gaming tables. Thus it is comparatively neglected at present by invalids. From the close proximity of the mountains to the sea, the walks and drives in the neighbourhood are necessarily limited in number, and those few are hilly.

The picturesque old town of Monaco is built on a rocky promontory with precipitous cliffs between one and two hundred feet high, and as it bends towards the south-east it forms the little bay of Monaco which possesses an excellent beach for bathing.

Mentone,

The next place we have to mention, has become with English invalids, though it is probably not so with those in health, the most popular of the Riviera resorts. It is situated like Cannes on the shores of two bays, an Eastern and a Western, the former being the smaller, the warmer and the most sheltered from winds. These two subsidiary bays, as we may call them, form

the large indentation of the coast, bounded by Cape St. Martin on the west, and Cape Mortola on the east. As at Cannes the two bays are divided by a ridge of hills, which runs southwards to the sea from the grand range of mountains to the north, which forms the amphitheatre in which Mentone lies. On this ridge the old town of Mentone is built; while the new town stretches along the shores of the bays to the east and to the west of it. The great beauty of the district is well seen from the road to Roquebrunnen, as it crosses the ridge of hills which encloses the district of Mentone on the west, and which runs southwards from the main range of mountains to form the promontory of Cape St. Martin. From there also a splendid view of Mentone is obtained, and its wonderfully sheltered position more fully realised. Viewing this lovely place from these points, one cannot be surprised at the rapturous expressions of admiration one often hears of this far-famed spot.

The drives and excursions in the neighbourhood are more numerous than at the

other resorts on the Riviera, excepting Cannes; Cape St. Martin is always a resource, and besides the Corniche road, the Gorbio, the Borrigo and the Turin valleys, as well as the road to Castellar, all afford pleasant drives and excursions.

Hotels are good and numerous in both bays, and afford plenty of variety in situation; while some are a considerable way from the sea, others are so close to it that the ceaseless noise of the waves on the shingle, especially in rough weather, is felt to be an annoyance by some invalids.

Though I do not possess any extensive personal acquaintance with the climate of Mentone, yet from all accounts and from my own enjoyment of the climate when there, one quite feels that Dr. Henry Bennet's eulogisms of the climate are quite justified. The air is fresh, tonic and bracing, and is rarely too keen, as it is so greatly protected from the cold winds so generally complained of in the Riviera; while the Mistral, though occasionally felt, is a comparatively rare wind.

The mean temperature of the six winter

months, from November to April, is slightly higher than Cannes, and is given as 51·5° F.; the lowest minimum of the winter is rarely as low as in many other places along the coast; this accounts, no doubt, for the success which the cultivation of the lemon meets with, for the lemon groves are quite a feature of the district. Though this demonstrates great mildness of climate, yet it does not prove absence of frost, for the lemon tree can stand 7° F. or 8° F. of dry frost without being injured. Every fifteen or twenty years, however, comes a frost which works terrible havoc amongst the trees, and causes great loss to the cultivators. The orange can stand two or three degrees more frost than the lemon, and is altogether a hardier tree.

The rainfall is given as 16·88 inches for the six winter months, falling on 47 days, and the relative humidity is 72·8 per cent.

The East bay of Mentone is probably the most sheltered nook along the whole coast, and is therefore particularly fitted for those patients who are unusually sensitive to cold winds; for these are during the spring

months quite a characteristic of the Northern Mediterranean littoral, and often give such patients attacks of pleurisy and bronchial catarrhs. Other patients, however, who are not so sensitive and who require a more bracing atmosphere find the confined space of the East bay oppressive and depressing, and for them the West bay is much more suitable.

Bordighera.

After crossing the Italian frontier at Ventimiglia, we next come upon Bordighera, which consists as usual of an old and a new town.

It differs from all the other resorts on this coast, in being situated on a promontory instead of in a bay. Perhaps it is for this reason that it is the least strikingly beautiful of them all.

The old town "consists of houses closely packed together on an eminence, to the east of what may be called the plain of Bordighera. It has the usual narrow streets, rather smelly, not overclean, here and there

arched over, or else buttressed across so as to weld all the houses more or less into one mass."

From the high ground immediately below the old town, a very extensive line of sea coast can be seen in either direction; although the view westwards extending as far as the Esterel mountains beyond Cannes is far more striking than the view eastwards, which only extends as far as Cape Verde, the eastern boundary of the bay of San Remo.

The modern part of Bordighera lies on a flat piece of ground to the West of the old town, and very little raised above the sea level. The main road runs along this flat plain and close to the sea, separated, however, from it by the railway and a few scattered houses. Building has taken place to a considerable extent along this exposed and dusty road, and indeed the two principal hotels are situated close upon it.

It would have been far better both for shelter and for sanitary reasons, for the villas and hotels to have been built a little further inland, where the ground begins to

rise towards the hills, and along the base of which runs the old Roman road, now made into an excellent carriage road, and affording excellent sheltered sites for villas. Between the two above-mentioned main roads lie most of the modern villas, ensconced amongst the olive woods, and though the ground is very flat on which they are situated, from its geological nature it is exceedingly porous, and thus affords good drainage and prevents any stagnation of surface water.

In considering the climate as it affects invalids, it is important to remember that instead of being placed in a protected bay, or two or three miles inland as is Hyères, Bordighera is situated on a promontory, and is therefore much more exposed to sea influence.

Sea winds are therefore the prevailing ones, and the East wind and not the Mistral, is the coldest and most felt. It is undoubtedly a windy place, and in the exposed parts winds are much felt, but level and protected walks are to be found amongst the olive woods, and up the valleys inland,

which is a great advantage to invalids. The mean winter temperature is very much the same as that of Mentone, being given as 51·3. The climate is tonic and bracing, and is specially fitted for cases of a scrofulous nature and is markedly suitable for children.

San Remo.

San Remo, only four miles further eastwards, has rapidly grown in popularity as a health resort during the last few years; and its having been chosen by the medical advisers of the late Emperor Frederick, as a suitable residence for him during his last illness, has further drawn attention to it.

It is situated in a bay and is well protected behind by an amphitheatre of mountains, rising to a height of 4,000 feet in Monte Bignone, and terminating in Cape Verde on the east, and Cape Nero on the west of the bay. The town consists as usual of an old and new part, the former rises very picturesquely up the rather steep sides of a spur of the mountains, and is

crowned at the top by a large domed Church—the Sanctuary.

The streets of the old town are very narrow and dark, the houses high and united to the opposite ones by numerous arched buttresses, to guard against earthquakes, which seemingly must have been far more frequent in former times than of late years; the assumed security of this whole district, however, was rudely shaken by the sad and destructive earthquake of February, 1887, which disastrously proved its liability to them.

The picturesque streets of these old towns are much frequented by artists, who are often to be seen with their easels, encamped in the centre of one of these dirty streets, seemingly quite oblivious to their insanitary and odorous surroundings! If they are invalids they should sacrifice their artistic tastes out of respect for their health, and avoid these favourite haunts, in favour of the many lovely spots to be found with nature's purest surroundings.

The modern part of San Remo stretches along the bay, nearly to an equal extent

westwards and eastwards of the old town; and the hotels are about equally divided on either side, the English generally preferring those on the west side.

The accommodation the hotels afford is good, but they are generally considered very expensive, which is especially felt by invalids, as all extras are charged for very highly in addition to the "pension" prices.

The climate of San Remo is said to be one of the mildest on the Riviera; its most marked features are, its greater degree of dryness, and its greater equability. The mean winter temperature for the six winter months, from November to April, is 51·3° F., which is almost identical with that given for Bordighera and Mentone. Sharp frosts occasionally occur, and Dr. Sparks speaks of seeing ice an inch thick in January, 1869. The annual rainfall is given as 28·78 inches, but these statistics are not very reliable. From October to April it is said there are, on an average, only 35 days on which rain falls. The Mistral occasionally blows, but the winds which are most acutely felt are the easterly ones, the North-

East or "Grecco" sometimes being a very cold wind. The climate is rather less bracing and stimulating than most of the places before mentioned along this coast, and its greater equability and soothing nature is best suited for those of a nervons, irritable and sensitive constitution.

Alassio.

The last of the well known resorts along the Western Riviera before reaching places, such as Pegli, which are really suburbs of Genoa, is the small and unpretending town of Alassio. It differs from the other places we have mentioned in having a summer as well as a winter season, as it is frequented by the English during the winter, and by the Italians during the summer. The latter go there in large numbers to avail themselves of the excellent sea bathing; the firm sand of the shore affording an excellent beach both for bathing and walking. A non-pebbly shore is not to be met with in any place that we have mentioned along this

coast, and therefore forms a delightful variety and gives a further attraction to this place.

The town consists of a long straggling street, running parallel to, and placed almost upon, the shore ; most aggravatingly shutting out all view of the sea, and leaving scarcely any approaches to the sea beach. A few villas belonging to English residents are scattered about, chiefly along the Albenga Road, beyond the old town to the east, and also upon the slopes of the hills which rise at the back of the town, and where also the pretty little English Church is situated.

The hotel accommodation is decidedly poor, the Grand Hotel situated right on the beach is perhaps the best, though the proximity to the sea on the one hand, and to the old town on the other, are certainly drawbacks to its position.

Alassio does not pretend to vie with the larger and more fashionable stations of the Riviera, nor does there seem much enterprise amongst the natives to induce invalids to visit it; and its having suffered so

severely from the late earthquake will probably further retard its development.

There are no reliable statistics as to the climate, but it probably does not afford so warm a winter resort as Mentone or San Remo. It certainly seems cooler in the latter part of the spring, for visitors are not unfrequently recommended to break their journey there, and are able to remain later than elsewhere along this coast.

CHAPTER VII.

Miscellaneous Resorts.

I propose, in this the last chapter, to give some brief notes on various resorts in different parts of the world, which I have visited from time to time, chiefly when in health. Though my stay at many of these places was short, some invalids may find these notes of use and interest, and others who are contemplating a voyage to the Antipodes may be glad to learn something of the climate that awaits them.

With regard to European resorts, I shall only further mention Arcachon, Biarritz, Pau and the neighbouring Pyrenean resorts; also Meran. Algiers, as being so popular and well known,* has also been included.

One of our own favourite English Sanatoria on the South Coast, may be here men-

* A few places which I have not visited, *e.g.*, Algiers have been included for the sake of completeness.

GENERAL VIEW OF MERAN.—TYROL.

tioned for the purpose of comparison with the many foreign resorts which have been referred to; and perhaps Bournemouth is as suitable a place as can be chosen, for if it is scarcely as warm as some stations, still it has the advantage over them of being drier and more sunny.

The indiscriminate writing up of Foreign Sanatoria has certainly done much harm, and has been the cause of great disappointment not only to physicians at home, but also to their patients. It is not surprising that a reaction is taking place in favour of our home stations, and that many are beginning to think that there is but little to be gained by going abroad, and encountering all the expense and inconvenience which that entails. This opinion undoubtedly holds good for large classes of patients who are now sent abroad; but there is, certainly, one class of disease *i.e.*, all chest complaints, which can in the majority of cases be more effectually treated by a judiciously chosen residence abroad than at home. Of this fact all who have any extended experience of foreign climates can scarcely have any

reasonable doubt, notwithstanding the oft-quoted drawbacks to a foreign residence, the reality of which no one wishes to deny; and it would be a great mistake if many who are able to leave England during the winter were not advised to do so. Though fully convinced of this, one does not wish to deny for a moment the great value of such resorts as Bournemouth, Torquay, Ventnor, etc., when compared with our cold, damp, sunless and foggy inland towns, for those invalids who cannot afford to go abroad, or who cannot be persuaded to leave their own country and friends.

Even at these well known South Coast stations, how frequently during the winter, and especially during the spring months, are large numbers of phthisical invalids unable to get out for days, nay, even weeks together, though fresh air is all essential to them. Whereas, in such climates as Mentone or Madeira, they would rarely be kept to the house for more than a day or two at a time, and that only occasionally.

It is the same with the large class of patients who suffer from yearly recurring

attacks of bronchitis. Indeed, one may safely say, that a delicate invalid would be kept indoors less during any winter month in such climates, than during the average English summer. Unfortunately, many leave England with the idea that they will find a perfect climate in the foreign country to which they are going, and of which no doubt they have heard nothing but praise. Consequently they are disappointed in not finding the Elysium they expected, and perhaps were led to expect, for they then find that there are certain drawbacks which every place must have of one kind or another; for a perfect place with perfect surroundings and climate will never be found.

Many, however, rashly rush abroad to places which are not sufficiently developed, but which may have been much advertised, or recommended by robust persons travelling for pleasure, who have really no experience of the requirements of the delicate.

When, for example, a man whose name is known throughout Europe (but not a physician) gravely recommends consump-

tives to take up their abode on the "Peak of Teneriffe above the clouds," simply because the climate is dry, utterly regardless of any other consideration, it is not surprising that many rash experiments of foreign places are made, and that many do return home unimproved in health and disappointed with the results of their residence abroad.

Bournemouth.

Bournemouth has very rapidly grown from a small fishing village, to be one of the most popular of our seaside resorts, not only for invalids, but also for those who wish to spend a pleasant holiday at the seaside.

It is only five and twenty years ago, since the author remembers having to coach from Holmsley Station, twelve miles distant, then the nearest point of railway. Bournemouth then consisted of only about four hundred houses, and a population of three thousand; whereas now its population amounts to thirty-two thousand. Many

who knew it in its earlier days, cannot help feeling that it is overbuilt, and some of its charm therefore departed; it, nevertheless, still possesses to some extent its special characteristics, and on all sides may be seen the remnants of the old pine woods, for which it is so noted, bordering the roads or surrounding and sheltering the many scattered villas, and giving off their pleasant balsamic and healthy odours.

Bournemouth is situated in a wide and open bay, formed and protected on the West by the Isle of Purbeck, and on the East by Hengistbury Head and the Isle of Wight, whilst it is fully open to the South. It is divided by the valley of the little river Bourne into an eastern and a western portion; this valley is occupied by the pleasure grounds which now extend from the shore for a mile inland, and are prettily laid out, and possess many level and sheltered paths for invalids. The ground rises gradually on each side of the valley to about 140 feet, and on this elevated position most of the villas and private residences are situated, extending now along the cliffs East

and West for a great distance. There are numerous level walks on the cliffs, well provided with seats; during the hottest season of the year a pleasant sea breeze may usually be found there, while the pine woods close at hand, especially on the East cliff, yield sheltered walks in windy weather. Besides many walks and drives, Bournemouth also possesses a fine pier, an excellent sandy beach for bathing and for children to play upon, with a tide which only ebbs and flows a few feet, and an excellent service of pleasure steamers. Altogether, Bournemouth has many natural attractions, which have been well supplemented by good drainage, a good water supply, and other sanitary advantages.

The climate of Bournemouth is intermediate in character between the relaxing and the bracing English seaside resorts, such as Torquay, Llandudno, and the Channel Islands on the one hand, and Eastbourne, Hastings, and Margate on the other. The mean annual temperature is 49·9° F.; the mean winter temperature from November to April 43·3° F.; and that of the three

coldest months, December, January, February, 41·6° F. The mean temperature, therefore, for the six winter months is about 8° F. cooler than the Riviera, 18° F. cooler than Madeira, and 2° F. cooler than Pau; while the mean of the three coldest months is almost identical with that of Pau, and slightly higher than that of Biarritz. The amount of sunshine is very good, but is slightly less than that of Ventnor or Eastbourne; the average for the past ten years is 1570 hours per annum.

The annual rainfall is 31 inches, falling on 140 days, against 30·21 inches at Hastings; 23·7 inches at Kew; and 23·7 inches at Margate. The number of rainy days is decidedly less than at some other English resorts (Torquay 180 to 200), but it is more than double the number experienced in the Riviera. The relative humidity is said to range between 75 and 86 per cent. The climate is therefore fairly dry, but it cannot very well maintain the claim made for it, "that it is the driest place in the United Kingdom," nor that "its climate is peculiarly beneficial to those invalids who find

the *moist* climate of the Riviera debilitating!"

As might have been expected, Westerly and South-Westerly winds are the prevailing ones, but East and North-East winds are often unpleasantly felt in the spring, and in some seasons are very persistent; sea mists are also occasionally experienced.

Bournemouth, indeed, has excellent recommendations for the invalid in its sheltered position, its moderately dry and equable climate, its dry and sandy subsoil, its good accommodation, and in its many natural and artificial attractions before mentioned.

The Mont Dore establishment has a very complete set of baths of every description attached to it, namely, Turkish, sea-water, shower, vapour, needle and douche, etc., besides possessing special chambers for carrying out the inhalation, spray and vapour treatments of the throat, etc. Massage treatment is also practised.

The results obtained in the treatment of phthisis are fairly satisfactory, both in the Sanatorium and amongst private pa-

tients ; Dr. C. J. and C. T. Williams record improvement in 65 per cent. of their cases, 10 per cent. remained stationary, and 25 per cent. became worse. It is also a peculiarly useful climate for delicate, scrofulous, or rachitic children, and for catarrhal laryngitis, asthma, and convalescence from acute diseases.

Arcachon.

Let us now pass from the English Bournemouth to what has been termed the Bournemouth of France, viz., Arcachon. This resort, like the favourite English one, has been built amongst the pine woods, which cover the once bare sand hills that separate the plains of Les Landes from the Atlantic Ocean. Situated on these pine covered sand hills surrounding an extensive salt water lake, which only communicates with the sea by a narrow channel about a mile wide, it affords an excellent sheltered spring and autumn, rather than a winter residence for invalids ; for it is said that the accommodation is not adapted to

the requirements of English invalids during the winter, and that then it has a deserted and "triste" appearance. It is much more sheltered than Biarritz from the Westerly gales, and during the winter the temperature rarely falls below freezing.

The climate is softer and more soothing, but less tonic and bracing than that of the Riviera; and it is therefore more adapted to inflammatory conditions. Whether due to the sea influences, the dry sandy subsoil, or the balsamic exhalations of the pine forest, seems uncertain, but many invalids do obtain decided benefit from a stay at Arcachon.

Biarritz.

This is a popular and fashionable bathing place and summer resort with the French and Spanish. It is much more exposed than Arcachon to Atlantic storms, and in winter "is subject to frequent and sudden changes of temperature." It seems, on the whole, but little better as a winter and spring residence than some of our own

English Southern health resorts. The mean temperature for the first four months of the year is both more equable and higher at Bournemouth than at Biarritz; at the former the mean is 43·4° F., while at Biarritz it is only 41·9° F.

If an invalid has to be expatriated, and undergo all the fatigues and inconveniences of a long journey, and the discomforts of a residence in a foreign land, it should at all events be, if possible, to a place which is appreciably better than can be found in his own country. Biarritz seems more suitable as a residence for those who simply require change of air, and for certain classes of nervous and dyspeptic persons, than for those suffering from chest complaints.

Pau.

Pau is in the province of the Basses Pyrenees, and is very prettily situated on high ground overlooking the valley of the Gave; from some parts of the town, such as the Place Royal, a fine and extensive

but distant view of the Pyrenees can be obtained.

It was formerly a very popular winter resort for invalids, and has been much lauded as such, but with the opening up of the Riviera, Algiers, Egypt, &c., which are now made so accessible, it has quite gone out of favour as a suitable residence for chest cases, its climate being now acknowledged to be greatly inferior to many others. Dr. More Madden speaks of it as being "essentially cold, variable, damp and dreary during the winter months." The mean annual temperature is 56·1° F; the mean winter temperature 41·8° F., or almost identical with that of Bournemouth (41·6° F.); the mean spring temperature is 54° F., and the mean for the six winter months from November to April, 45·7°, or only 2° F. warmer than Bournemouth, and 5° F. colder than the Riviera. The thermometer often falls below freezing, on an average of twenty-five nights during the winter, and snow falls on eleven days. The rainfall during the winter months is 26·87 inches, falling on 69 days, and during the year 42 inches on 119 days;

also, the relative humidity is very high. There is a remarkable freedom from wind, but as a consequence fogs are not at all unfrequent.

The damp, cold, and variable climate, renders it an unfit winter residence for cases of phthisis and for most cases of bronchitis. Some cases of asthma are said to do very well.

There are many very lovely and pleasant resorts amongst the Pyrenees, which can be visited in spring and summer from Pau, if those who have wintered there, or in Malaga, Algiers, etc., do not intend returning home during the summer. Most of these places are, however, rather enervating, and though situated at considerable elevations they do not possess the stimulating and invigorating air which is experienced amongst the Swiss mountains; yet as very many phthisical persons resort to them for the sake of taking the waters, which are said to do so much good in certain cases, a few of the best known places may here be mentioned.

Eaux Bonnes.

Eaux Bonnes, one of the best known of these resorts to English physicians, can now be easily reached by rail from Pau; Laruns, the terminus of the branch of the railway which runs up the Vallée d'Ossau, being only about three miles distant. It is picturesquely situated at the mouth of a gorge, and is thus surrounded on all sides by mountains, excepting on that by which it is approached from Laruns. The rocky sides of the narrow platform on which the town is built, have actually had to be blasted away to make room for building. Notwithstanding that it appears so shut in, there are several very pleasant walks to be had amongst the woods on the mountain sides, and which have been formed at great expense; the chief of these is called the Promenade Horizontale, a capital, level, and well made road, running along the side of the mountain towards Eaux Chaudes, and commanding beautiful and extensive views of the Vallée d'Ossau.

Eaux Bonnes, as is the case with most of these Pyrenean resorts, is very popular with the French and Spanish, but is very little frequented by the English, either for health or pleasure.

The sulphur waters are used both locally (for gargling and inhalation) and internally, and are considered by French physicians to have a remarkable curative effect in phthisis, many regarding them as almost a specific in that disease. This opinion is not held by English physicians, though the beneficial effects of the waters in certain local manifestations of that disease, such as tubercular laryngitis, are recognised, as well as in other less serious forms of throat disease, such as is commonly called clergyman's sore throat, and in chronic catarrhal affections. When I was there in the month of June, the climate seemed scarcely appropriate for phthisical patients, for it was damp, warm and enervating, with thick fogs enveloping the whole town every morning, which used not to lift till midday.

Eaux Chaudes is very beautifully situated on the banks of Gave, in the midst of moun-

tains, the sides of which are clothed to their very summits with chestnut, box, and pine trees. It is about an hour's drive from Eaux Bonnes, the latter half of which is up a grand and narrow gorge through which the Gave rushes, often several hundred feet below the level of the road. This gorge suddenly opens out, and the village of Eaux Chaudes then appears in the wider valley which is then entered upon. It is not a popular resort at present, and its sulphur waters and baths seem to a great extent deserted.

Cauterets.

Cauterets is reached after a pretty drive of about seven miles up a picturesque valley from the railway at Pierrefitte. The valley then seems to end in a "cul de sac," formed by high mountains and in which Cauterets lies embosomed. Out of this "cul de sac," however, several mountain valleys lead to picturesque and interesting spots, the most noted of which is the Pont d'Espagne, and the wild and beautiful Lac de Gaube.

Cauterets is situated at an elevation of 3,050 feet, but being so enclosed by mountains, it possesses rather a hot and oppressive summer climate. This is the more felt from the hotels being situated in the close streets of the town. In fact this is one of the drawbacks felt throughout the whole of the Pyrenees, that there are no hotels placed in pleasant and airy situations, as in Switzerland; but in all the resorts the hotels are all crowded into the streets of the various towns.

The bathing establishments are very complete, and Cauterets is looked upon as a real health, rather than a pleasure, resort by the visitors who follow up the treatment with assiduity and regularity. Crowds of patients may be seen at 7 a.m. daily, going to and returning from the various springs, each with their small graduated glass in a little netted bag slung from their fingers, parasol, or coat buttons. The springs are all highly charged with sulphuretted hydrogen gas, and vary in temperature from 55° F. to 145° F. They are very useful in some skin diseases, chronic rheumatism,

and as at Eaux Bonnes, in throat affections; and, according to the French physicians, in phthisis.

St. Sauveur is quite a small place on the road to the village and far-famed Cirque de Gavarnie, one of the chief points of interest for the tourist in the Pyrenees. St. Sauveur itself possesses some similar springs to the other Pyrenean Spas, only they are weaker. The residence of the late Emperor Napoleon III. and the Empress Eugenie, much increased its popularity.

Bagnères de Luchon.

Luchon is the gayest and most popular of the Pyrenean health resorts, and is quite a fashionable resort of the Parisian, reminding one, with their gay costumes, of Trouville in the summer or of Nice in the winter. Indeed, pleasure and the desire to forget the ills to which flesh is heir to, seem to take the first place in the consideration of the visitors, instead of the serious business of drinking the waters and taking the baths

which pervades most of the other bathing establishments, although this object, in reality, has brought most of the visitors together to this lovely spot.

The hotel accommodation is of course very good, but rather expensive during the height of the season. The public gardens are most pleasant, the walks formed through the woods are most delightful to wander along on hot days, and there are numerous excursions in the neighbourhood for the stronger class of patients.

The "Etablissement Thermal" is very complete, and provision is made for the application of the waters in every conceivable manner, by inhalation, pulverisation, douches, etc.; it also possesses numerous single baths, and several swimming baths.

There are many springs of various temperatures containing sulphuretted hydrogen and the sulphides in various degrees of strength. The treatment of disease by these waters is very extended, for they are used in chronic rheumatism, various skin diseases, in the earlier stages of phthisis, and "for the relief of chronic chest affec-

tions, as bronchitis, laryngitis, and all catarrhal conditions of the air passages."

Notwithstanding the great belief in the efficacy of these sulphur springs amongst the French physicians as before stated, and which is also held by English physicians for some affections, yet there is a large body of medical opinion which assigns the whole benefit attained at such waters simply to the effects of the hot water bathing, the drinking of large quantities of hot water, to the inhalation of moist warm air, to the increased amount of exercise in the open air, to the climate, and to the regulated diet and hygienic rules enforced by the physicians on their patients at such resorts, rather than to any special efficacy of the sulphur waters themselves. Even a German doctor, who may be supposed to be much in favour of bathing establishments, writes in Von Ziemssen's "Handbook of General Therapeutics:" "Many of the procedures, carried on at such baths belong to the large chapter of blind experiment and of speculation, and have gone so far, that when we send patients to certain baths

we are obliged to give them letters warning them against some extravagant and senseless proceedings, which are nevertheless popular."

Meran.

The only other European resort that I shall here allude to is Meran in the Austrian Tyrol, which is, amongst English physicians, certainly growing in popularity as a winter health resort for phthisical patients, though it has been known and duly appreciated by the Austrians, especially by the Viennese, for a long time past.

Meran is beautifully situated on the southern side of the Tyrolese mountains, at an elevation of about a thousand feet above the sea, and surrounded on every side except towards the South by an amphitheatre of mountains rising to a height of from 9,000 to 10,000 feet. These mountains form a great protection to Meran and its suburbs of Obermais and Untermais; but this protection is not complete, for there are two gaps in them, one to the N.E., and

the other to the N.W., through which the Passer and Adige flow to mingle their waters about a mile below the town of Meran. In stormy weather and especially in the spring months when Northerly winds are most prevalent, cold blasts sweep down these branch valleys upon Meran, and are much felt. The spring, too, being remarkably dry, the dust at that season is very trying, and as I have before said in Chapter III., such dense clouds of it frequently pass down the valley as to completely blot out the landscape, and I have myself been kept to the house for three days together by the violence of the wind, and the quantities of dust driven along by it, penetrating everywhere.

The old town of Meran is interesting to the tourist, but undoubtedly the best quarter for invalids is Obermais, which is considerably elevated above the level of the valley. It thus escapes any dampness and fog which may exist in the flat valley, during the rainy months of October, November, and December, while also, to a great extent, it escapes the cold blasts of wind

above mentioned. The lower districts have, however, easier access to the splendid level promenade and gardens along the banks of the Passer. About the centre of the promenade the Kurhaus is placed, where hydropathic, compressed air, massage, and other treatments are carried out, and opposite to which the band plays daily.

Meran has decidedly a cold winter, skating often being possible for nearly the whole of the months of December and January. The winter, however, is a short one, there being a very sudden fall of temperature from the mean of October to that of November, namely from 55° F. to 42° F., and a correspondingly sharp rise from March to April, namely from 46° F. to 54° F.

January is the coldest month, the mean temperature being 32·6° F. The mean winter temperature from November to April is 41·8° F. The rainfall is about 16 inches from September to April, three quarters of which falls before January.

Meran possesses a dry, cold winter climate, with a decided absence of wind, and

a large proportion of sunny days, but the spring climate is not as good in comparison, many invalids leaving it at the end of February or beginning of March on this account. Many phthisical patients reap considerable benefit from the dry, cold and bracing winter; an intermediate climate between that of the Riviera, and that of the Alpine districts.

The grape cure is carried out in the autumn, and as this treatment is supposed to be applicable to a large number of different complaints, the grapes have to be taken in different quantities and at different times, according to the disease, and to the effect to be produced. In phthisis only one to two pounds of grapes are to be taken daily after breakfast, the grapes having a large amount of sugar in them, are in this quantity said to be nourishing and fattening. In other complaints five or even six pounds are ordered to be consumed daily, and a painful task it becomes for a very dubious benefit.

Algiers.

Though Algiers is not in Europe, and though I have no knowledge of it from personal experience, yet a few words as to the place it holds as a health resort and the character of its climate may be useful.

It is very picturesquely situated on the slope of the coast range of hills facing the Mediterranean, and though the life in the town is most interesting to the visitor, owing to the various costumes and customs of the various nationalities living there, yet the city itself is not fit for invalids to reside in, on account of its insanitary conditions. But some of the suburbs, notably that of Mustapha Supérieur, situated on higher ground, and some little distance from the town, are exempt from such drawbacks, and the above suburb possesses some well placed hotels, villas and pensions.

There are great discrepancies in the various accounts of the climate, the truth probably being that winter seasons vary considerably, and that the observers have

not studied the climate sufficiently long to come to a correct estimate of the average winter conditions.

The mean winter temperature is probably about 57° F. (though it has been given as high as 62° F.), and is therefore about 6° F. warmer than the Riviera. Snow lies on the mountains to as low a level as 1600 feet, and although the thermometer very rarely falls to the freezing point, people describe the atmosphere during wet weather as peculiarly damp and chilly.

The Sirocco, which is dreaded on account of its heat and dryness, as well as from its being laden with fine dust from the Sahara, is said to blow on an average on four or five days in each month; but the prevailing winds are the W. and the N.W., which are charged with vapour from the Atlantic and Mediterranean. Hence they deposit a large amount of rain and snow on the Atlas range of mountains, and Algiers itself receives about 36 inches of rain per annum, 31 inches of which fall during the winter on 90 days.

It seems doubtful whether the climate of

Algiers itself possesses for the majority of cases any superiority over the Riviera. It has advantages for some patients, namely, that it is rather warmer, that it is more equable, and that there is not the same contrast between the hot sun and the cool shade; but these advantages are rather neutralised by its being occasionally damp and cold, and on the other hand, very dusty in dry weather.

On the Northern littoral of the Mediterranean, on the contrary, when cold it is generally a dry cold, and when damp it is warm, and it is well known that it is the damp cold which is injurious to the invalid. The climate often injuriously affects those who are subject to hepatic derangements, and invalids subject to such complaints should avoid Algiers. Dr. Marcet remarks of the climate, that "it will prove inefficient in the cure of consumption."

America (U.S.).

This immense country of course comprehends a vast variety of climate, and new health resorts of more or less suitability are

being yearly opened up. The moist warm climate of Florida, the dry mountain climate of Colorado, and the dry marine climate of Southern California, are the best known to English physicians.

Florida possesses a moist warm climate and has recently been recommended for certain cases of phthisis, such as would in Europe be sent to Madeira, and its climate much resembles that of the West Indian Islands. It is not very healthy during the summer months as fevers are then apt to occur.

Colorado.

The climate of Colorado and its health resorts are perhaps better known in England than any in the States, chiefly through the writings of Dr. Denison. The whole area of the State, indeed, can be reckoned as a health resort, but the places best known are Denver, Colorado Springs, and Manitou.

Colorado has a remarkably dry climate, as might have been expected from its position in

the centre of a large continent, a thousand miles away in a direct line from the nearest seaboard. Changes of temperature are very sudden at times, and owing to its elevation on the central table-land of America it has a dry cold winter climate. On account of its great dryness, patients make up parties for camping out on the mountains during the summer months, and can thus live in the open air day and night. The air is certainly most invigorating even during the hot summer weather, but the winter climate is considered the special time for the cure of phthisis, just as in the Alpine resorts. During the winter there is very much less snow but considerably more wind than at Davos Platz, and it is not so cold, the coldest month being about 12° F. higher; but very severe cold is occasionally experienced.

Denver is a large and populous town, situated at an elevation of 5,200 feet, on a bare and open plain about thirteen miles eastwards from the base of the mountains, quite unprotected from cold winds in winter, and exceedingly dusty in summer. In fact,

it did not appear to me to be a very suitable place for patients already attacked with disease, unless in the first stage and physically strong, although it may be very good for those who have merely a predisposition to phthisis.

The mean annual temperature for five years, from 1872-1877, was 48·6° F.; the mean temperature for December and January 32° F.; for July 72·5° F.; the mean daily range was 28° F. The rainfall amounted to 16·15 inches, falling on 68 days, 40 of which were snowy. The annual relative humidity is only 47·2 per cent., which it will be noticed is remarkably low, while that for the Alpine regions is decidedly high.

Colorado Springs has been so named, not because it has any mineral springs of its own, but because it is near the springs of Manitou, and as it has been laid out for the purposes of a health resort, it perhaps gives it a more attractive name. It is situated on an open plain about eighty miles south of Denver, and five or six miles away from the base of the Rocky mountains, at an elevation of 5,775 feet. When I visited it there

were only a few scattered houses, but it has grown very rapidly of late years, and it is said now to possess many good hotels and boarding houses.

There can be but little shelter in winter from cold winds, as it is completely exposed in every direction excepting westwards, on which side is the grand and lofty range of the Rocky Mountains, with the mighty Pike's Peak rising exactly opposite. There are many most interesting excursions in the neighbourhood, some of which, such as the ascent of Pike's Peak, one of the highest points of the Rocky Mountains, 14,400 feet, involve a considerable amount of fatigue. That, however, did not at that time, I am happy to say, stand in my way, and to the top of it I climbed. There is also a more circuitous road by which the ascent can be made with comparative ease on horseback in two days, as there is an important Government Signal and Meteorological Station at the summit. Extraordinary electrical phenomena are sometimes experienced, and so highly is everything charged with electricity that sparks can be drawn from any object.

Glen Eyrie, the Garden of the Gods, Monument Park, Manitou, and other interesting places can also be visited.

Manitou is situated about 500 feet higher than Colorado Springs, viz., at an elevation of 6,315 feet, just at the very base of the mountains. It is decidedly the most inviting of the health resorts, and being placed in a glen, and so close under the mountains, it is certainly more protected from cold winds, but at the same time does not receive so much sun. There are some good hotels but the village is quite small. The position is exceedingly beautiful, both from its wildness and rocky beauty, as well as from the luxuriance of the vegetation softening down the ruggedness of the rocks.

Here are also the mineral springs above referred to, which have given the name to Colorado Springs. There are five or six springs varying in their nature, some are highly charged with carbonic acid, one being chalybeate, and some are said to resemble those of Ems.

The district has grown rapidly in public favour since I was there, but I felt at the

time that with the aid of the various springs it must become a national watering place, so good and healthy is the position, so invigorating is the air, so beautiful are the surroundings, and so many are the natural attractions of the locality, and of the excursions that may be taken therefrom.

California.

The greater part of this State has little to recommend it to the health seeker; the coast line is for the most part subject to strong cool sea breezes, which are often laden with sea fog, but these winds are tempered and the fogs dispersed by passing over the coast range of hills.

A very different climate is then obtained between these mountains and the Sierra Nevada range; one where rain often does not fall for eight months together, where cultivation has to be carried on by irrigation for a great period of the year, where the heat during the summer is most intense, not unfrequently exceeding 100° F. in the shade,

and where the dust is overpowering. This central plain of California no doubt gave the State its name, for it is said to be derived from two Spanish words "Caliente fornalo," meaning "a heated furnace," and well it deserves the name. There is, however, a portion of the Southern Californian littoral which is said to possess a very favourable marine climate for phthisical patients. It is remarkable in that, though a marine climate, it is dry, and does not possess that large amount of humidity of the air which is usually associated with such climates.

The best known of the resorts situated in this portion of California are Los Angeles, Santa Barbara and San Diego. The heat of the summer is tempered by the sea breezes, and is seldom excessive; while the winter temperature is very temperate, though slight frosts are occasionally experienced. The mean daily range of temperature is high. These places, indeed, possess an invigorating, dry, though not very equable, marine climate, and very good results are said to have been obtained there in phthisis; but probably the climate

would be found more trying by sensitive invalids than is generally admitted.

San Francisco itself has a trying climate for those who have any delicacy of the chest, and it also cannot be considered a healthy town even in other respects. Oaklands, on the opposite side of the harbour, and the most important residential suburb of San Francisco, possesses a much more pleasant and desirable climate, in that it is exempt to a great degree from the cold sea winds, the damp sea fogs, and from the clouds of dust which trouble that city.

Australia and New Zealand.

In these days when travelling for health is so much the fashion, and when such magnificent Ocean Steamers have so shortened the passage, a run to Australia and New Zealand is thought merely a holiday trip for those in health, or for the jaded worker; though it still possesses and must always do so, in spite of every comfort that can be supplied, even on the best steamers, many trials for the delicate.

Consequent upon the number of those passing backwards and forwards, a more or less definite knowledge of the conditions of life in those far off colonies is spreading amongst all classes in Great Britain; yet it is still scarcely realised, how various are the climates that these countries present, and how important it is, for those who are starting for these colonies, to have some fairly definite idea as to the conditions they will there meet with, and as to the most suitable localities for their several maladies. This choice will depend on the time of their arrival, and whether their intention is to settle in one of the colonies, or merely to pay them a visit of longer or shorter duration according to medical advice. It must be borne in mind, that there are many districts and climates of both Australia and New Zealand which are not suitable for the phthisical, whether in an early stage of the disease or not; and that if a residence is taken up in any one of the large Capitals, and clerk's work or other business be undertaken which will prevent an open air life, it will be found in a large proportion of cases

that very little benefit is obtained, and that they will fare no better than at home. For such work too, it must be remembered that there is almost as much competition as in England, and that he who cannot do a full day's work cannot compete with a healthy man in any employment. Again, for the more pronounced cases who have gone chiefly for the voyage, the hotels do not afford the accommodation and attendance an invalid requires; even in the large cities the hotels are not first rate, and are very inferior and a great contrast to those in the United States. As it is universally found that consumptive patients do better in their own house or apartments, than even in the best managed hotels of Europe, it is far better that they should have their own house and attendants (though colonial servants are a real and practical difficulty) if their determination is to stay for some time in the country for the benefit to be obtained from the climate. There is not then, the same temptation to join in the more or less harmful amusements of hotel life, and though the food of a hotel may be good and all that

is required for the strong, it may be quite unfitted for the requirements of an invalid. Far better still, as the cities are not suitable for such cases, let the patient go to some squatter's station up country, if he is sufficiently strong, and live there an open air life, interesting himself as far as possible in the pursuits of those around him.

Australia has a hot and dry climate giving it quite a distinct character from that of England or New Zealand. Except along the coast regions, water-famines are not rare and thousands of sheep and cattle may perish in a dry season for want of water. This remarkable dryness, however, is very favourable to many cases of phthisis, and it is these dry regions beyond the Blue Mountains, the Australian Alps and the Dividing Range, which afford the most satisfactory stations for the cure of this disease. The death-rate from phthisis in these pastoral regions and rural districts is less than half that of the large cities of Australia, which have now nearly as high a death-rate from this disease as England.

There are three distinct climatic regions

in the colonised part of Australia. Firstly, the coast regions and that part of the continent which is under oceanic influence and which comprise all the Capitals of the various colonies; secondly, the mountainous regions of Victoria, New South Wales and Queensland; and thirdly, the dry inland pastoral plains which extend towards the interior of the continent, on the further side of these mountains.

Victoria possesses all the above climates. In Gippsland it has the best marine climate of Australia, and in Mount Macedon, easily reached from Melbourne, it possesses a good mountain station with an elevation of over 3,000 feet. Its situation is so healthy and so beautiful that it is a favourite summer resort with the inhabitants of Melbourne.

Perhaps, however, for those with any phthisical tendency, the dry inland plains of the Murray district are the most satisfactory.

The large and flourishing town of Melbourne suffers much from sudden fluctuations of temperature, from cold Southerly winds and also from the hot winds from the

interior, or so called "Brick-fielders." These winds are extremely parching in their nature like the "blast from a furnace;" the thermometer rises from 100° F. to 110° F. in the shade during their continuance, and recedes but little during the night; all vegetation is parched and withered up, and the air is laden with dust from the plains of the interior of the continent, so that all doors and windows have to be kept shut, and people go out as little as possible during the three or four days over which they usually last.

The mean annual temperature is 57·7° F. and the average rainfall is 25·65 inches. During seventeen years, the temperature in the shade was registered above 100° F. on sixty-one days, and on fifty-two occasions below 32° F.

New South Wales.—This, the oldest of the Australian settlements, possesses all three of the climates above spoken of, but the marine climate as found in Sydney, Port Macquarie, Eden, etc., though more equable than that of Melbourne, is not very satisfactory; but Paramatta (the original seat of the

Government of New South Wales), Windsor, etc., which are not immediately on the coast, possess a rather drier and less relaxing climate.

In Mount Victoria the colony possesses a good highland station; and the Darling and Murrumbidgee River districts—inland pastoral plains—afford many more or less satisfactory places, such as Hay, for the stronger class of cases who can "rough it" a little. These districts are characterised by great heat, dryness, and remarkable absence of cloud.

Sydney itself, situated on the south side of its lovely and world renowned harbour, has a more equable and at the same time damper and more relaxing climate than that of Melbourne or Adelaide. The hot winds are, however, less trying and less frequent than in those Capitals, and the winter climate is very pleasant and healthy. The mean annual temperature is 63° F. (winter 54·6° F., spring 63·4° F., summer 70·9° F., autumn 64° F.) the winter temperature rarely falls below 40° F. The mean annual rainfall amounts to about 50 inches.

Queensland.—The climate of Brisbane, the capital, and that of the coast generally is not considered good for phthisical patients, being oppressively moist and hot; but in the highland district of the Darling Downs, Queensland possesses a really good climate for chest complaints, and Warwick, only about 150 miles from Brisbane, is highly spoken of as a Sanatorium.

The mean annual temperature of Brisbane is 68·7° F.

South Australia.—Adelaide the capital is exceedingly hot during the summer months, and the hot winds, above mentioned, are often very trying; it is at that season quite unfitted for phthisical patients. It has, however, a good winter climate. The mean annual temperature is 63° F. (winter 53·2° F., spring 62° F., summer 73° F., and autumn 64° F.). The mean daily range is high, *i.e.*, 20·7° F. The temperature may vary from the extremes of 115° F. in the summer, to 33° F. in the winter.

The mean annual humidity is 58 per cent.

Tasmania.

The old name of this pretty little island was Van Dieman's land. It lies about a hundred miles off the coast of Victoria, and forms a favourite summer resort for the Australians, who are driven away from their cities by the great heat then experienced.

"Hedgerows of hawthorn and privet, unknown upon the Australian continent, abound, and the odour of sweet briar, honeysuckle and apple-blossom. There is a verdure on the hills, a softness in the air, a sense of tranquillity and repose, grateful to the traveller after the parched plains of Victoria and the glare and bustle of Melbourne."

The two principal towns in the island are Launceston on the North, and Hobart Town the capital, on the South side of the island, 121 miles apart, but now united not only by the excellent old and convict made road, but also by a railway.

Hobart Town is beautifully situated on the estuary of the river Derwent, with mount Wellington rising to a height of

4000 feet immediately behind the town. It has a very English appearance and possesses a well wooded public park called the "Domain," with prettily laid out gardens on the banks of the estuary.

The climate of Tasmania is decidedly cooler and damper than that of Australia, the mean annual temperature of Hobart Town is 55° F., and that of the coldest month (January) 50° F., equivalent to the winter temperature of the Riviera. The rainfall is 23·5 inches. Hobart Town is decidedly cooler than Launceston, and is more subject to sudden changes and cold Southerly winds; but it does not suffer so much from the hot Northerly Australian ones, which are not unfrequently felt on the north side of the island. But the Northern aspect of the island seems on the whole to be the most appropriate for chest complaints, only there is little accommodation to be had outside Launceston. During the Australian summer the island affords an excellent change of climate, but its efficacy as a permanent resort for phthisical patients seems scarcely proved.

New Zealand.

New Zealand consists of two principal islands separated by Cook's Straits about fifteen miles wide, and lying about 1100 miles South South-East of Australia. Though New Zealand has only an average breadth of 140 miles, it extends for 1100 miles in length, or through nearly thirteen degrees of latitude. Each island now has several fine cities, such as Christchurch, Dunedin and Nelson in the South island, while Wellington the capital, Napier and Auckland, are the principal towns in the North island.

The Maoris, the native inhabitants of New Zealand, are a most interesting race, and very different from the low type of the aborigines of Australia or Tasmania, but they are fast dying out; there are now only about 40,000 in the North island, and 2000 in the South island. They are a fine, tall, well-developed race, and easily adapt themselves to civilised ways; the tattooing on some of the old chiefs is very elaborate,

but is now little practised. Their great failing was cannibalism, though in other respects they were greatly superior to many savage races. The tribes were frequently at war amongst themselves, and they used invariably to eat their prisoners. I have myself picked up many human bones out of the sand heaps, charred and burnt from one of these orgies, which took place a few miles north of Christchurch, after a defeat and massacre of the South islanders by one of the Northern tribes. But one cannot here enter into the many points of interest concerning this fine race of men, or the many beauties of their country, with its remarkable volcanic region, where till lately the lovely and unique pink and white terraces of Rotomahana delighted the visitor; with its magnificent evergreen forests, teeming with ferns from the delicate Todea superba to the giant tree-ferns thirty or forty feet in height, each frond some fifteen feet in length; with its remarkable parasitic plant the Rata, which begins its most wonderful life by being swallowed as a seed and then growing in the interior of a caterpillar, and after killing

its first host begins its scarcely less curious arboreal existence, when clinging at first to a noble forest tree for support, it finally not only kills but supplants it, standing at last as an independent giant of the forest a hundred feet or more in height.

Owing to the number of degrees of latitude through which New Zealand extends, the climate naturally varies very much; it is on the whole an exceedingly good one and there are few, if any, in the world that can compare with it in suitability for the Anglo-Saxon race. The heat is never excessive in the summer or the cold very great in winter, fogs are rare, and there is much more good settled weather than in England; indeed it might be described as a greatly improved edition of our own English climate.

As to temperature, Auckland is naturally the warmest town, with a mean annual temperature of 59° F.; and Dunedin is the coldest with a mean temperature of 50·5° F. Wellington and Nelson are intermediate, with a temperature of 55·5° F., and Christchurch has a mean of 52·7° F. Frosts rarely

occur anywhere in the North island, but sharp frosts are experienced at Dunedin and Christchurch, and severe cold and heavy falls of snow occur on the mountains of Westland. The rainfall and humidity differ greatly, the rainfall varying, for instance, from 25·33 inches, falling on 107 days at Christchurch on the East of the Southern island, to 119·11 inches at Hokitika on the West coast. Wellington seems to have the lowest relative humidity, namely, 68 per cent., and Hokitika the highest, 90 per cent. New Zealand is, as a whole, subject to strong winds and heavy gales. Wellington has the reputation of being the worst in this respect, though the whole Westerly coast, especially of the South island, is much subject to heavy Westerly gales. Of local winds the only ones requiring notice are the hot N.W. winds which occasionally sweep across the fertile Canterbury plains. These winds are probably not the same as the Australian hot winds, as has been suggested, but are produced by the local and physical conditions of the country. The Westerly winds in passing over the high chain of mountains along

the West coast are rendered cool and made to deposit their moisture, they then descend upon the Canterbury plains to the East of the mountains and in descending become capable of absorbing much more moisture, and therefore feel hot and dry.

Napier in the North, and Nelson in the South island (though the latter has the heavy rainfall of 81 inches) are generally considered the most suitable localities for phthisical patients. Auckland is rather humid and enervating, Wellington too windy and variable, and Dunedin too damp and raw for such patients. On the whole, Australia probably presents more suitable climates for chest cases than New Zealand, excepting during the heat of the summer.

* * * *

In conclusion, I would urge on my *medical* readers the vital importance of duly weighing the constitutional condition of the patient as well as the mere local manifestation of the disease, and to take into careful consideration the previous history of the case, before deciding on sending a phthisical patient to brave the trials of a sea voyage,

the rigors of an Alpine winter, or the inferior accommodation and various deficiencies of some much lauded health resort. For having myself travelled both when in health and as an invalid, I know full well how untoward occurrences (such as being becalmed in the tropics for a week, or being snowed up in an hotel without fuel for a few days during an Alpine winter), which would have seemed mere trifles in the former condition, become serious matters in the latter.

Again, I would urge on any of my *non-medical* readers, who may be fellow sufferers with myself, to take their health in hand at the very first manifestation of the disease, and to make any sacrifice necessary for a complete change of life and surroundings, till their health is completely re-established.

A few months change with careful treatment at the commencement of the disease, is often worth years of care afterwards; indeed its importance is even greater than that, for it may result in a complete cure, whereas afterwards mere palliation may only be obtainable.

Do not endeavour to struggle on a little longer "just till the end of the season," or

"just till this examination is passed," and so on, for by that time this insidious disease may have gained such a hold on the constitution that the cure will take far longer to be accomplished, even if it is ever effected. Again, when once the change is decided upon, wherever it may be to, do not imagine that because the evil seems slight at first, you can do as others around you are doing; or that you have only a "little delicacy of the chest" which will get well of itself without trouble and care on your part; for change of climate is only a means to an end, it affords no specific for the cure of this disease in the sense of the advertising quack.

Though consumption kills its thousands annually, and stands as one of the chief causes of death in most civilised countries, yet it *is* curable, but only by care and the adoption of a thoroughly healthy mode of life; so despondency should not take possession of any one so afflicted.

When recovery is so far effected and so little trace is left even on medical examination that you are pronounced cured, great care in many ways is still necessary; for

cured you may be as far as the mere physical signs are concerned, yet not so as regards the constitutional discrasia.

Again and again has it been my lot to see and hear of such cases, where a foolish excursion involving excessive fatigue, or a chill, has brought on a serious relapse, perhaps never to be recovered from; for the constitution seems to require a much longer period than is generally supposed necessary to regain its normal power of resistance. But it seems impossible for a large proportion of patients to benefit by the melancholy experience of others. If, however, the few hints I have been able to give in the foregoing pages, and the advice I have attempted to offer may enable anyone to profit by my personal experiences, the author will feel his labour will not have been in vain.

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